EXCAVATING

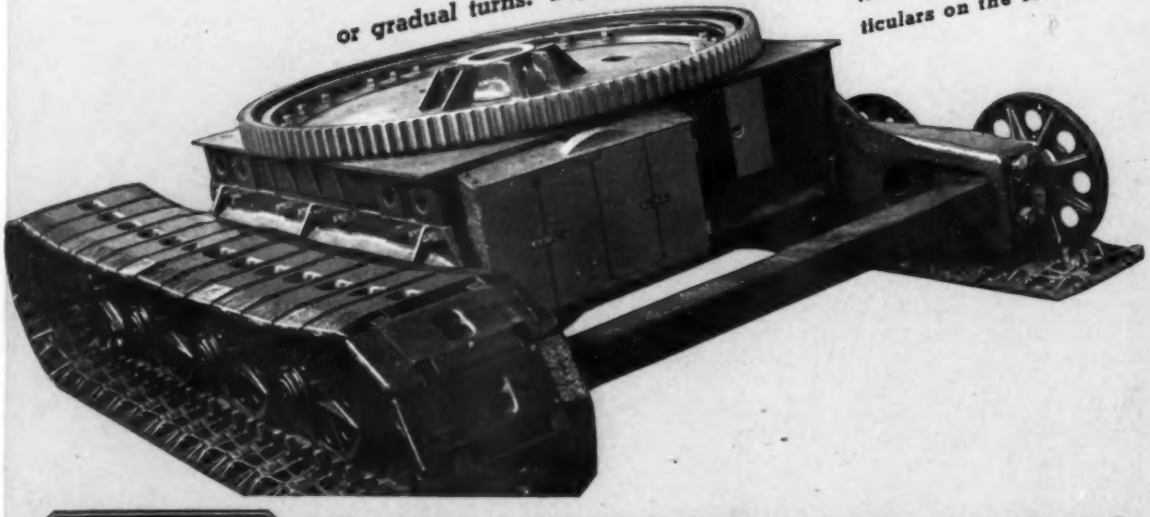
FOUNDED ENGINEER

Vol. XXXI August 1937 Number 8

Speed • Stamina • Mobility

On its all-welded base, large-diameter turntable, strong caterpillar mounting, the modern, powerful Bucyrus-Erie 120-B makes many a short cut in operations possible. It climbs stiff grades, makes sharp or gradual turns. Digging in or out of a cut is a simple matter.

Write today for full particulars on the 120-B.



BUCYRUS ERIE

EXCAVATING, DRILLING, AND MATERIAL HANDLING EQUIPMENT... SOUTH MILWAUKEE, WISCONSIN, U. S. A.

EXCAVATING ENGINEER

FOUNDED 1905

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Storm! . . . . . **Front Cover**

This photograph was taken at Foley Brothers' quartzite quarry in Wausau, Wisconsin, as a thunderstorm was approaching.

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Excavating in full swing at Grand Coulee. Though concrete pouring has taken the spotlight there lately, we thought you'd like this picture, sent us by The Bureau of Reclamation.

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LOOKING AHEAD

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Mining Ball Clay

Bell Clay Company uses open pit method in getting out high grade clay in Tennessee. Operation is characterized by thorough precautions to keep clay pure and clean, from bank to consumer.

Mosquito Control

Essex County, New Jersey, is waging a successful war against the mosquito pests, with a ⅜ yard clamshell as one of their major "big guns."

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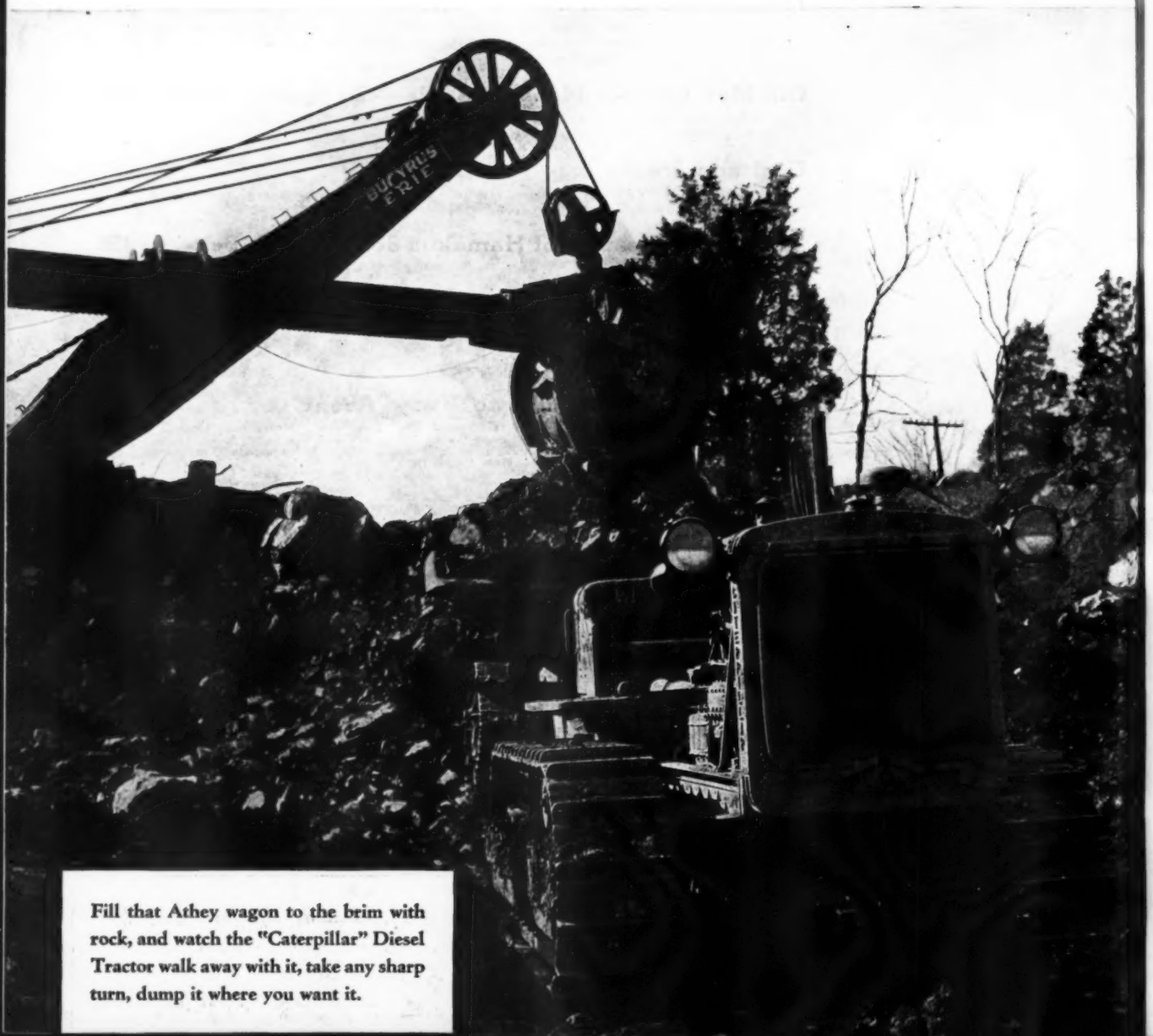
WHEN A RIGHT ANGLE IS THE WRONG ANGLE



Fill that Athey wagon to the brim with rock, and watch the "Caterpillar" Diesel Tractor walk away with it, take any sharp turn, dump it where you want it.

Old Man Geology Makes Trouble

How a Quarryman-Contractor Conquers Cut Through Heavy, Abrasive Syenite

By SPENCER JONES

OLD MAN GEOLOGY has made hard work for many a road contractor, but the Callanan Road Improvement Company, South Bethlehem, N. Y., walked into an extra tough job when it contracted to build the 2.17 mile Federal Aid Project No. 352-A, New York State Highway No. 5, running east from Little Falls, N. Y., along the southern foothills of the Adirondacks.

The contract, awarded on a bid of $498,430.50, calls for "improving, with Federal Aid, the Little Falls High Level State Highway, including separation of grades at the Little Falls and Dolgeville R. R., 1.07 miles in the City of Little Falls and 1.10 miles in the Town of Manheim. All in Herkimer County."

The highway eliminates two bridges, one over the main line of the New York Central Railroad and one over the Little Falls and Dolgeville Railroad, both of them in Little Falls. It involves 351,000 cubic yards of unclassified excavation at a bid price of $1.22 per yard. 210,000 cubic yards of this are rock—and that's where the trouble began a few million years ago.

Tough Rock Formation

It seems that when Old Man Geology was busy making the Adirondack mountains, he decided to give them a good solid foundation. So he melted up a mixture of iron, potassium, aluminum, magnesium, calcium and silicon and floated the granite and dolomite mountains on this fluid base of metal and glass while he squeezed them into folds higher than the Himalaya mountains are today. Then he let this metallic glass foundation cool off and solidify and started grinding down the rough spots with glaciers, rivers, rain and wind.

Today, where erosion has been most severe, you will find places in the Adirondacks where this hardened foundation rock is exposed—and other places where it is covered only by a thin layer of other kinds of rock. Geologists call this hard, heavy metallic glass "syenite." It is a mixture of orthoclase and hornblende and when you pick up a hunk of it you'll think it's the hardest, heaviest rock you ever handled.

The highway that the Callanan Road Improvement Company con-

● **The picture above gives a good idea of the tough material handled in the syenite cut. Working three 8-hour shifts daily, the 1¾-yard Bucyrus-Erie Diesel rig has averaged about 2,600 yards daily output.**

tracted to build is to climb up around the side of a low mountain on the north bank of the Mohawk river. According to geological maps of the section, this mountain is dolomite—a calcium-magnesium carbonate, neither very hard nor very heavy—resting on a base of syenite. A few million years ago the top of this mountain was a divide from which the Mohawk river flowed east and the now extinct Rome river flowed west. How the geologists know it was named the "Rome" river is one of their little mysteries.

Anyway, a fault developed right where Little Falls is today and then a glacier came along and cut a notch through the mountain at the fault, whereupon the Mohawk river proceeded to steal the Rome river's entire drainage basin, draining it out through the notch and completely reversing its flow.

Appearances Are Deceiving

In the easterly part of the fault a great mass of syenite had filled the underside of one of the folds in the dolomite. Erosion has removed most but not all of the dolomite, so that today what looks like a dolomite spur on the side of the mountain is actually a huge hump of syenite with an outer coating of dolomite. And the deepest cut on the new highway—at the top of the grade—passes directly through that dolomite-camouflaged spur of syenite!

With a mineralogical hardness varying from 5.5 to 6.5, that syenite is obviously extremely abrasive. Much of it will cut glass, not to mention the fact that it dulls drills and wears away bucket teeth, buckets, truck bodies and bulldozer blades like nobody's business.

Though Callanan Road Improvement Company officials were surprised, to say the least, to discover that their deepest cut was to go through syenite, they were not panic stricken, for they have been quarrymen since 1885 and roadbuilders for nearly as long. Their limestone quarries at South Bethlehem and Feura Bush, 8 or 10 miles south of Albany, have given them plenty of experience removing rock.

Durable Equipment Needed

They had to meet a contract completion date of December 1st, 1937, so time was decidedly important. It was clearly impossible to place enough shovels at work to do the job within the required time if only one 8-hour shift was worked daily. The answer seemed to be to find a shovel that could stand under a continuous 24-hour load, handling one of the hardest, heaviest, most abrasive kinds of rock in the world—and to keep this shovel amply supplied with syenite blasted to sizes that could be loaded.

They figured that if they could find such a shovel and keep far enough ahead of it with drilling and blasting they could get the job done safely within the time limit. After careful investigation they bought a shovel and started working November 18, 1936. The job was visited May 19th, 1937, for the purpose of gathering material for this article. Although the job, as a whole, was only about 20 per cent completed at that time, the deepest part of the syenite cut was nearly finished and the drillers were sinking the blast holes on the eastern side of the hump for the cut under the

● Top: Auxiliary loading shovel on this Callanan job is a 2-yard Bucyrus-Erie steamer. The rig works two 8-hour shifts, handles 1,700 yards daily. Bottom: Ingersoll-Rand X-71 wagon drills put down blast holes. Crew in center of picture is loading. About 90 holes, averaging 20-feet in depth, are fired per blast.

● Top: Looking over tool shed and air lines in foreground, you get a general view of the rock cut. The two Bucyrus-Erie shovels are at the left; a ¾-yard Northwest at right is used for general clean-up work. Bottom: A view of the rock cut taken from the opposite direction to the photo above.

railroad track. Progress charts indicate that the contract will be completed possibly ahead of time, for the rest of the job offers no particular problems compared with the syenite cut.

The schedule of operations at the grade separation—the place where the drillers were working when the job was visited and where the syenite cut passes under the Little Falls and Dolgeville Railroad track—is given in the contract as follows:

1. Excavate rock cut west of track, hauling over tracks at grade.

2. Shift track 20 feet to southeast and excavate for structure and all materials west of structure not included in above Item No. 1.

3. Build structure complete and shift tracks to structure.

4. Complete roadway excavation.

The Railroad Company is to shift tracks to temporary position and at completion of structure will shift tracks back to structure and will furnish all labor and materials necessary for this work.

The "structure" referred to is a plate girder skew bridge with a 63-foot span to carry the track over the highway.

The Route the Road Takes

A brief description of the route of the highway may be of interest at this point. Starting in the City of Little Falls, the road dips downward for a little way, crosses a high narrow fill and then climbs up a maximum 5 per cent grade along the north wall of the famous Little Falls Gorge. At the bottom of the grade, after crossing the high fill, it passes up through about 1,200 feet of earth and rock cut with a maximum depth of nearly 40 feet. Emerging from the cut it ascends to a little more than 200 feet above the level of the river where it runs through about 1,500 feet of syenite cut with a maximum depth of probably 75 or 80 feet.

The top of the grade is in this synite cut and from the high point the road descends on a maximum 5 per cent grade, passing under the railroad track, previously mentioned, through a continuation of the syenite cut. Just east of the railroad underpass it crosses 3,500 feet of fill of varying heights, goes through another 1,200 feet of earth and rock cut with about 25-foot maximum depth and continues downgrade to join the present main highway in the Town of Manheim.

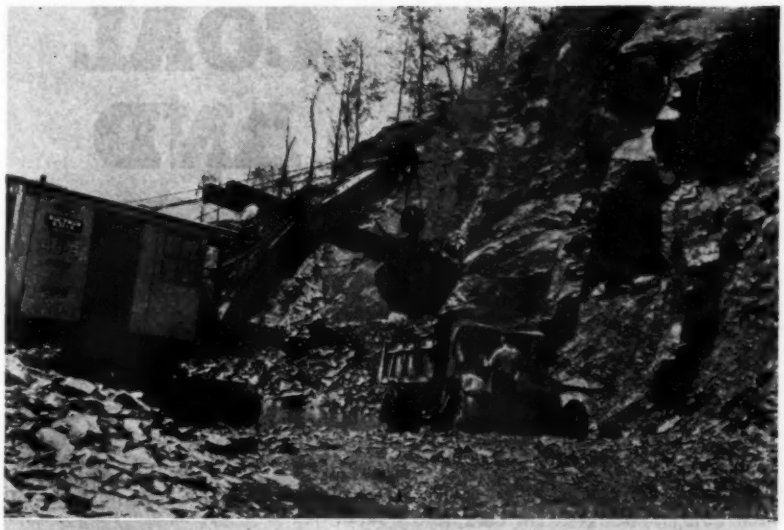
Looking down from the highway to the east, south and west, one sees the Mohawk river, the New York Central main line tracks, the New York Barge Canal and the present New York State Highway No. 5, all crowding together and passing through the mountain notch at Little Falls and vanishing in the hilly distance toward Herkimer.

What the Job Includes

The roadway through rock is to be 64 feet wide from toe to toe of opposite slopes, with an 18-inch-deep gravel base 52 feet wide for paving. Through earth cuts the roadway is to be 59 feet wide from toe to toe, with an 18-inch-deep gravel paving base 59 feet wide. On fill the roadway is 66 feet across the top, with a 4-foot-deep

LITTLE FALLS HIGH LEVEL STATE HIGHWAY

● Top: The high bank shows tough character of the syenite. No vertical cleavage planes. Loading out 4,300 yards of this rock per 24-hour day, day in day out, is the job of Callanan's two Bucyrus-Eries. Bottom: Part of the job is constructing an underpass below the single-track railroad shown behind the drills.



gravel paving base extending the full width of top of fill. Slope of rock cuts is 6 on 1. Earth cuts and fills are 1 on 1½. Maximum grade of the highway is 5 per cent. The deepest cut is 77 feet. The highest fill is 55 feet. No paving is included in the contract.

A total of 711 feet of 24″; 315 feet of 36″ and 210 feet of 42″ cast iron culvert will be required for drainage and the contractor must also build 107 feet of 3′6″x 5′0″ and 169 feet of 5′0″x5′0″ concrete box culvert.

A part of the abandoned quarry and stone crushing plant of the General Crushed Stone Company being on the right of way, much of this equipment, including a derrick, pan conveyor, crushers, tanks, air compressors, small buildings, tracks and trestle, must be removed and stored by the contractor. Other buildings to be removed include 5 dwellings and 3 garages.

At the time the job was visited, practically no work had been done on any section except the hardest one—the syenite rock cut—but the contractor anticipates no unusual difficulty with the two other cuts and the fills.

Drilling

Here in the syenite the drillers work two 8-hour shifts daily, seven Ingersoll-Rand X-71 wagon drills being used for making blast holes and six Ingersoll-Rand S-68 Jackhammers for secondary drilling. Compressed air is supplied by two stationary 2-stage Sullivan Compressors, one 850 and one 750; one stationary single-stage Sullivan Compressor, a 360; and one portable 2-stage Sullivan. Two storage tanks are used and 90 lbs. pressure is supplied to the drills.

Blast holes are drilled at the rate of one foot per minute in the syenite with drill steel. Holes are 2¾ inches diameter at the start and 2 inches at the bottom. Drills make an average of 20 feet of hole before sharpening is required and all sharpening is done on the job. The blacksmith shop has 3 forges, 3 oil furnaces and 2 Ingersoll-Rand Drill Sharpeners—a No. 40 and a No. 50.

Average depth of blast holes is 20 feet. Snakeholing is not used, but holes are sprung wherever possible. Hole spacing is 7 feet and number of holes fired per blast averages 90. Du Pont 40-, 60- and 75-per cent Gelatine are used for explosives, ¾ to 1 lb. of explosives bringing down 1 cubic yard of rock. 3,500 cubic yards of rock are brought down with each blast, 95 per cent of which can be handled by the shovels, so there is little secondary shooting to do. The rock, although nearly amorphous, has distinct vertical cleavage planes, as will be noticed in the illustrations. It has a specific gravity of 2.9 and weighs 4,932 lbs. per cubic yard in the solid. Blasting keeps two days ahead of shovel requirements, which are slightly more than 4,200 cubic yards each 24 hours. The blasting procedure followed has solved its part of the problem.

Loading

The rock is loaded with a 43-B Bucyrus-Erie shovel, powered by a Buda-Lanova Diesel motor and equipped with a 1¾-yard bucket. This shovel has been working 24 hours a day in the syenite cut—three 8-hour shifts. It never gets a rest except for greasing and oiling. In the three shifts it loads nearly 2,600 cubic yards of syenite. This answers the rest of the problem.

Working with the 43-B in the

(Continued on page 484)

COAL AND ICE

Kennedy & Tewes Find Speedy Mobile Equipment Helps Solve Seasonal Problem in Fuel and Ice Supply Business

RETAIL coal dealers are usually ice dealers also, and may have several additional side lines. The seasonal nature of the demand for coal, and the resultant necessity to find a profitable way to keep equipment and personnel going the year around, is the reason for the diversification of activity.

No exception to the general rule, the firm of Kennedy & Tewes, of Waukegan, Illinois, can supply local demand for soft coal, coke, fuel oil, ice and beer. And Waukegan fire-place owners can get split logs from them as well. About 65 per cent of the business is coke, which is made in Waukegan.

We publish this article with the thought that it may indicate a source of profit for contractors owning small, mobile excavators. There are hundreds of retail coal yards throughout the country. Many of them could profitably use a small clamshell in their busy season, the winter. Since this is the contractor's slack season, he might very nicely rent his small machine then.

The accompanying article describes a typical job, giving an idea of what is required of a machine on a job of this kind.

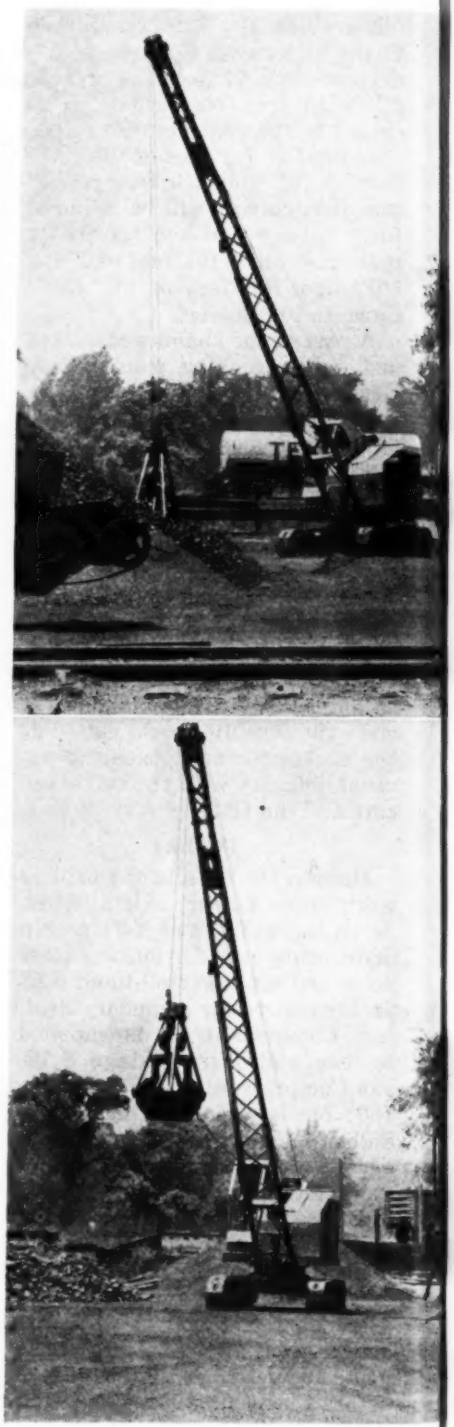
"Convenient Location"

With an office in the main section of Waukegan, Kennedy & Tewes coal yard is on the east side of the Chicago & Northwestern Railroad, with spur tracks running into the yard itself. Coal and coke come into the yard in bottom-dump hopper cars, which are unloaded with a Chicago Automatic Conveyor. Coal is stock-piled directly from cars by this conveyor, then loaded to hoppers with a new Bucyrus-Erie 10-B. This rig is equipped with a 33-foot boom to give extra lift, and a ⅜-yard Kiesler clamshell bucket. Five hoppers are maintained; three for coal, each having 10-ton capacity, and two for coke, each having 8-ton capacity.

Hopper outlets are provided with screens. This feature, and the advantage of having several types of fuel ready for simultaneous loading, are the reason hoppers instead of direct loading are used, according to H. G. Tewes.

Ford 1½-yard trucks are used for hauling, having proved more satisfactory for this type of work than larger units. Truck bodies, made by St. Paul Body & Hoist Company, were specially designed by Kennedy & Tewes. Chutes for unloading to basements are slung in brackets under the sides of the body, leaving the sides free for display of the company name. The truck chassis are painted bright red, the bodies deep green. Side panels have firm name and business attractively printed in gold on a red background. The trim appearance of these trucks as they make deliveries is an excellent advertisement for the company. Average haul is about five miles and average loads about three tons, though as high as five tons have been carried in special cases. Coal is weighed on a Columbia platform scale as trucks leave the yard.

Kennedy & Tewes handle approximately 10,000 tons of coal



● **Top: The ⅜-yard clamshell is about to load a truck (not shown). Ordinarily, trucks are loaded from hoppers, only occasional special orders being loaded direct. Chicago & Northwestern tracks in background. Bottom: After loading the trucks, the 10-B moves across the spare track to its regular job of filling hoppers from stock piles.**

and coke per year, with a 60-ton-per-day average during the busy season from October 15 to April 15.

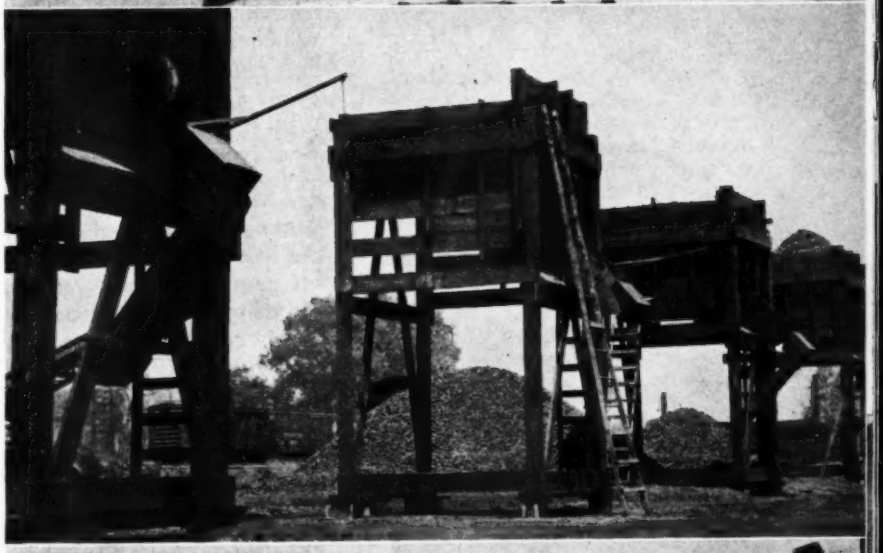
In July, when we visited the job, the Bucyrus-Erie clamshell had been in service a relatively short time. Mr. Tewes told us they had installed it during the off season so they would be accustomed to its speed when the heavy work arrived. At the time, two trucks were being used hauling coal, with the other eight owned by the company being used in the ice business. As soon as they caught up on summer fill-ups, Mr. Tewes said, they intend to move the 10-B to the lake-front. There, operating as a dragline, it will remove foundations of some old natural ice houses and clean up the property.

The speed and mobility of the ⅜-yard rig have already proved of value in the coal yard. The machine has considerable moving to do, from stock piles of coal and coke to bins and from one end of the yard to the other.

One side-line job already done by the 10-B was the icing of 10 cars of leather. About four tons of ice were used per car, with the 10-B loading it from trucks.

Although the machine is relatively new, it has already proved its adaptability for this type of work, according to Mr. Tewes. "It's certainly easy on gas," he said, "won't use five gallons a day in the type of work we're giving it now."

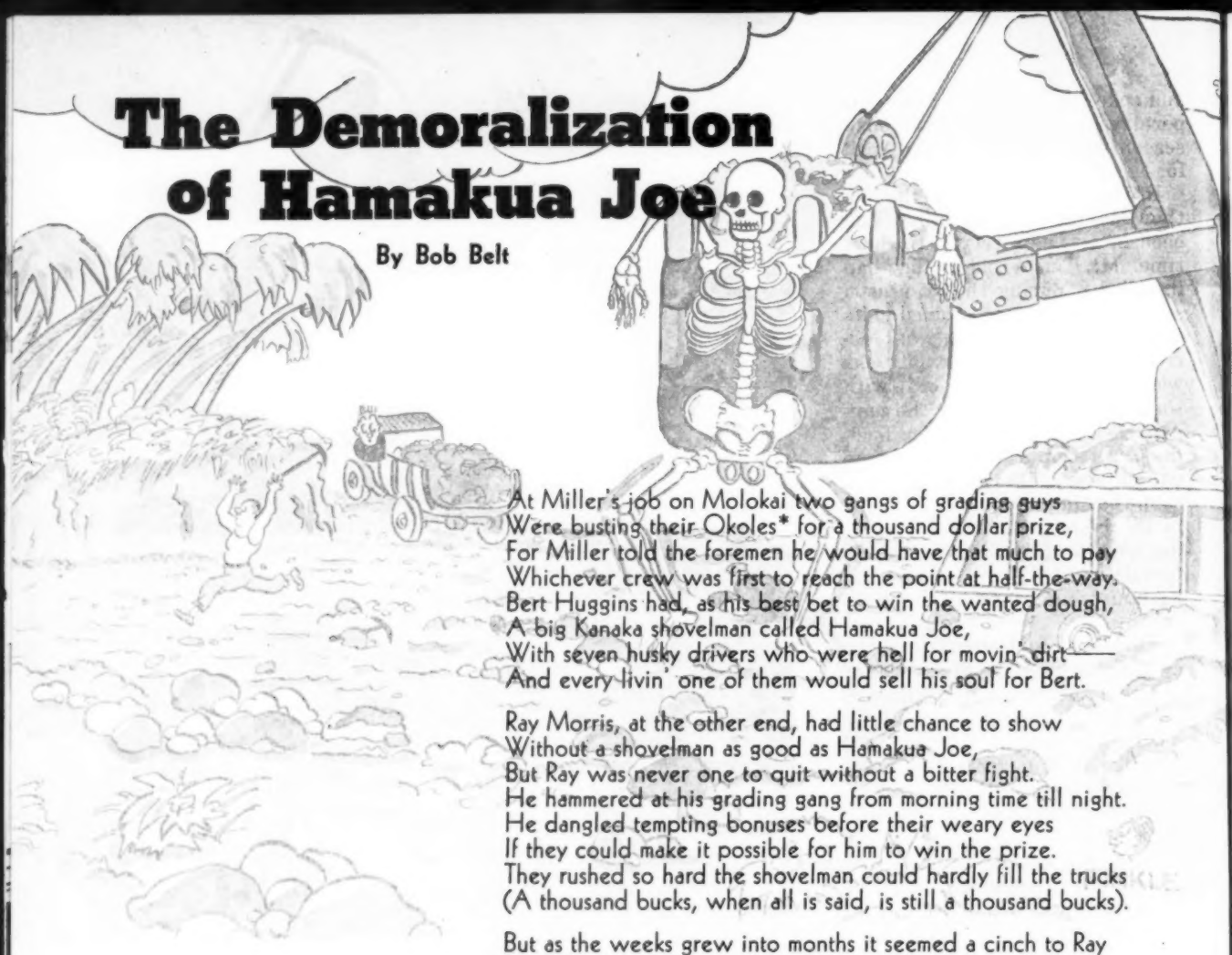
The firm of Kennedy & Tewes have been operating in Waukegan since 1928, having moved there from Milwaukee. Both A. S. Kennedy and H. G. Tewes are actively engaged in supervising the various activities in which the firm is concerned. Experienced in the coal and ice business, they believe in the economy of modern equipment, and the value of quality in product and service.



● **Top: H. G. Tewes takes a turn "at the throttle" of his firm's new clamshell, He says they got the rig during the off season to learn to control its speed by the time busy season starts. Center: Trucks take coke and coal from these hoppers. which are provided with screens, Bottom: Coal and coke unloaded from cars and stock-piled by a conveyor is loaded into hoppers with the clamshell.**

The Demoralization of Hamakua Joe

By Bob Belt



At Miller's job on Molokai two gangs of grading guys
Were busting their Okoles* for a thousand dollar prize,
For Miller told the foremen he would have that much to pay
Whichever crew was first to reach the point at half-the-way.
Bert Huggins had, as his best bet to win the wanted dough,
A big Kanaka shovelman called Hamakua Joe,
With seven husky drivers who were hell for movin' dirt——
And every livin' one of them would sell his soul for Bert.

Ray Morris, at the other end, had little chance to show
Without a shovelman as good as Hamakua Joe,
But Ray was never one to quit without a bitter fight.
He hammered at his grading gang from morning time till night.
He dangled tempting bonuses before their weary eyes
If they could make it possible for him to win the prize.
They rushed so hard the shovelman could hardly fill the trucks
(A thousand bucks, when all is said, is still a thousand bucks).

But as the weeks grew into months it seemed a cinch to Ray
That Huggins' gang would beat him to the point at half-the-way.
Because of expert dipper work by Hamakua Joe,
The big Kanaka shovelman who hailed from Papaikou.
Then one of Ray's Hawaiian boys, a pick and shovel man,
Came runnin' up to him and said, "This kind of place no can.
I sweeng my peek and deeg up bones, I run like hell to you.
Where someone ma-ke no can deeg. Thees sacred place. Kapu!"

Ray Morris looked around the gang and heaved a happy sigh.
A more irreverent, godless bunch had never passed his eye.
That night a dozen grading men went sneaking up the grade
With skulls and bones in gunny bags and here and there a spade,
And on the top of Huggins' cut they planted out a row
Of realistic skeletons for Hamakua Joe.
(The bones were mostly bovine and the skulls were neat cement,
But to an undiscerning eye they looked as they were meant).

Joe's second shovelful next day revea'ed a mess of bones,
And then a skull came rolling out to rattle down the stones.
The big Kanaka shrieked a shriek, the drivers turned to stare,
All eight Hawaiians left the job as fast as they could tear.
With Huggins' gang demoralized the thousand went to Ray
Because his crew was first to reach the point at half-the-way.

To make the ending happier, I feel constrained to add:
Bert Huggins got the thousand back, and all Ray Morris had
By demonstrating certain prestidigitative tricks
With bones of quite a different sort, with spots from one to six.

*darby, pratt, backside

Field Notes

METAL hooks, nails or hanging devices are often not practical for smooth wooden shovel handles, yet a shovel or spade lying around on the ground is always a source of danger. A good handle can be made with two ordinary shoemaker's thread spools.

Trim away the flange on the sides until the shovel handle just fits over them and fasten with small lag screws or carriage bolts to the most convenient place for hanging the shovel. A slight turning motion will be necessary to drop the handle in place, but once on, it cannot be easily pushed or knocked off. This makes it a practical device for use on the interior of a truck or portable tool shed. The soft wood of the spools will not nick or mar the wood of the handle.

—*Frank Bentley, Jr.*

Ten Pertinent Packing Pointers

THE following suggestions and warnings, based on the many years of practical experience of a prominent eastern packing manufacturer, will be found valuable in the installation of packings. To follow them may mean freedom from trouble that would occur when even the best packing is improperly installed.

1—NEVER fail to make clear what the packing is to pack. In other words, with what will the packing make contact?

2—NEVER guess at a size, diameter, width or height, when ordering packing. Many failures result from small errors in dimensions.

3—NEVER allow too little or too much clearance between follower plate and inside cup wall, or any metal parts behind any upright leather wall. $\frac{1}{16}$" to $\frac{3}{32}$" on each side, depending on size of packing, is recommended.

4—NEVER doctor packing lips with a pocket knife or file, or batter lip in installing. A rounded lip destroys the seal. Packings can be softened by soaking in warm water if necessary.

5—NEVER apply cup packings with flange too high for clearance at the head of the cylinder. Keep systems clean, so sediment will not collect in cylinders and wear the packing.

6—NEVER apply cup packings to end of plunger which is badly worn; pressure will force the packing down into clearance between plunger and cylinder. Leather washers cut from old cup packings can be made to reinforce the heel of cups on worn plungers.

7—NEVER apply "U" packings where plungers are worn without reinforcing under heel with leather cushion rings.

8—NEVER look for long service on scored plungers or in scored cylinders; resurface or reline such equipment to proper dimensions.

9—NEVER allow water to corrode cylinder walls, plungers or rods. Use an anti-rust agent that will prevent this and will act as a lubricant.

10—NEVER squeeze hemp or fabric filled "U" packings in glands where such packings are to replace solid section compression packings; set gland up to point where "U" packings are free to function properly.

—*W. F. Schaphorst, M.E.*

Simple Emergency Battery Test

THE question of whether a dry cell is alive or "dead as a door nail" often arises when one has nothing at all to test it with. Sparking it by placing a knife blade across the poles is commonly done, and a small spark in many cases is evidence of some strength and further usefulness. Many batteries, however, do not afford any evidence of "pep" on this sort of an examination, even with some strength left in them. A simple, yet very positive test, is shown in the accompanying illustration. Tear off a thin strip of foil from a cigarette package wrapper. Several folds makes a good test. Touch it too and lay it across the

poles. Current, if there is any present, will quickly melt the thin foil. It will melt with a quick wisp of smoke and drop in two. Nothing accurate, of course, but a quick easy way to pick out a "dead one."

Home-Made Hinges

THIS sketch shows how to make one's own hinges out of staples. For instance if it is desired to hinge a board, drive two rows of staples—one row horizontally, and then the other row vertically through the remaining "eyes" of the first driven row of staples. Drive the staples accurately, each the same dis-

(*Continued on page 461*)

EXCAVATING ENGINEER

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The Excavating Engineer Publishing Co.
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ARNOLD ANDREWS
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Associate Editor

JOHN I. MORAVEC
Art Director

RALPH H. DEIHL
Assistant Editor

E. M. HEUSTON
Advertising Manager

For Value Received?

You are one of a boisterous, buoyant, people. A people who are also notoriously unwilling to take the trouble to look behind the surface of events and policies that affect you.

The comparatively uncomplaining way in which you, yourself, pay hidden taxes is an example. You buy gasoline for your car and think the price is really 19 cents a gallon. Actually, you are paying about 14 cents for the gasoline and five cents in taxes. Gasoline at 14 cents a gallon is a good buy, and you pay the 25 per cent tax without fuss because you can afford to. Do you know what your annual gas tax bill is? Do you make any attempt to find out what those tax funds are used for, and whether or not such a high rate is necessary or justified?

The sales tax on gasoline is a relatively open hidden tax. Less easy to isolate are the taxes paid as part of the purchase price of your car, your food, your rent. If you could, and would, isolate them, you might be startled into action.

Receipts from all taxes go to support government and governmental activities. You, therefore, buy government and its services. The price you pay is the amount of your taxes. You are pretty shrewd about buying most things. Before getting a car, you investigate its reputation, its performance, its upkeep cost, and you find out whether it will cost you more than another car giving the same "output."

But you don't do that with government. Hidden taxes make it tough for you to find out just what you as an individual are paying for government. General figures are too big for you really to grasp, and anyway, you've always had the money so you could pay for government without having to go hungry or sacrifice your car or your radio. If government has been inefficient, if you have been paying too much for it—well, it's just meant a little less gravy for you. Your standard of living has increased pretty constantly over a period of years, more so than that of citizens of any other country. You've bought your government, and not minded the price too much.

Can you go on doing that?

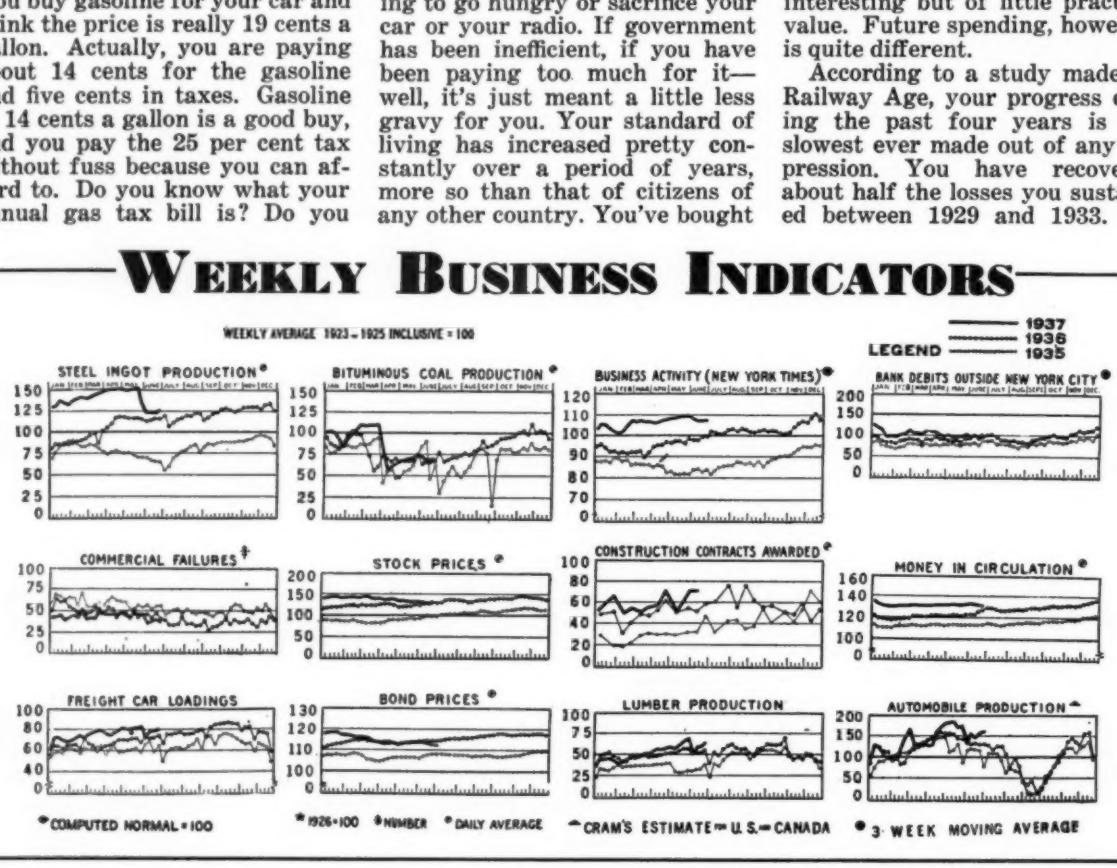
The cost of government has increased tremendously since 1932. As an individual, you don't yet know how much, because you're going to be paying for many years what the government has already spent. This is not necessarily a cause for panic; not if you have received correspondingly increased value.

There has been a little increase in the cost of most accepted government functions. Army, navy, protection of life, liberty and pursuit of happiness cost a little more than they used to, but not much. The increase in the price you are paying for government comes from two fundamental policies of the present administration. One of those is the re-distribution of wealth and income; the other was, and is, pulling you out of the recent depression.

You have been coming out of that depression for four years and inquiry into whether or not any acceleration of progress as a result of governmental spending was worth what you have already paid for it would be academically interesting but of little practical value. Future spending, however, is quite different.

According to a study made by Railway Age, your progress during the past four years is the slowest ever made out of any depression. You have recovered about half the losses you sustained between 1929 and 1933. Al-

WEEKLY BUSINESS INDICATORS



ways before, in four years, you have recovered beyond the previous peak.

Progress out of depression is stimulated by a return of confiidence and a consequent increase in capital investment. This results in increased demand for labor and raw material, in increased production. The larger volume of construction and production means more income and wealth to be distributed among everybody.

In the present recovery, capital investment, construction both of residences and factories, has lagged behind. The reason for the lag lies in the uncertainty created by the governmental policies aimed at re-distribution of wealth and income. Economically, these policies are unsound because they ignore the cardinal fact that the only practical, the only possible, way to increase the income and wealth of any group is to increase the total income and wealth. In creating uncertainty, in trying to force a larger share of income and wealth for one group in a limited period of time, government is defeating its very purpose. Basic economic facts cannot be changed by administrative mandate or congressional proclamation.

Government should realize and admit that, and try to achieve its purposes in a way that is at least practical. Until it does, it is inefficient and does not justify the extreme increases in price it is exacting from you, its buyer.

Your buoyancy has pulled you out of past depressions; has enabled you to pocket any losses, government- or otherwise-created. But the price government is now charging you for its services is so much larger than you've ever had to pay before that you need to drop your "I-should-worry" attitude and find out what you, as an individual are getting for your money.

Something To It?

The following letter from one of our readers airs a grievance which is probably a fairly common one in the field. If you have found an answer to the problem so feelingly discussed in this letter, or if you have any comments to make on either side of the fence, send them in to Excavating Engineer. Any and all comments to a "Department of Powder Engineering" will be welcome.

H. H. Linn

Announcement is made of the death of Holman H. Linn, Vice President in Charge of Engineering of The Linn Manufacturing Corporation, Morris, N. Y., manufacturers of heavy-duty tractors. Mr. Linn was the inventor of the Linn Tractor and was the founder of The Linn Manufacturing Corporation which has been manufacturing these tractors for the past twenty years. He was killed while taking off from the Morris Airport in his private airplane the afternoon of Saturday, July 3rd.

EXCAVATING ENGINEER

For many months your Excavating Engineer has given me much know along many lines, for which I thank you greatly.

I now find myself in trouble, and I am most certain that many others are likewise afflicted.

The affliction in this case comes on about this time of year, generally, like the Pox, in divers places all over the USA especially.

One might term the disease by several names, I cannot do it justice, because my emotions are out of control.

I refer particularly to the Summer Road building and Powder Slinging Crews that infest our Hiways and load all the holes with all the Powder the big companies can make and sell—the idea being to BLOW GOD'S ROCKS as far in all directions power of powder will. Resulting in Peebles of all sizes and shapes to travel several hundred feet from the location of BUST and cut down Transmission Lines, Phone Lines, Trees, and anything and everything that is within a Radius of Sight.

Why not make the Powder Busters Profession a real one? Why not start a department of Powder Engineering? Something that would tend to instruct some of the thirty year old BUSTER-UPS how to get the work done well and better all around, and HOW.

In New York City and some other places I have noted Blasting that does not destroy the Earth around the operations nor the lines, windows, etc., etc. and in fact one walks over the job and is not bothered.

Such a department would not please the powder companies—but it would me. I believe that you can frame a department and get some real interest in using powder to handle rock right to the end of not destroying things.

Lots of replies would show much and many men take pride in using powder rightly and just properly loosening the sections required to be broken up.

At the moment we are having our main 44000 Volt Line shot down—interrupting power to largest customer. Talking with the 30 years experienced boss we learn that it just cannot be done any other way, no one can do it, that rocks will fly regardless, and all such.

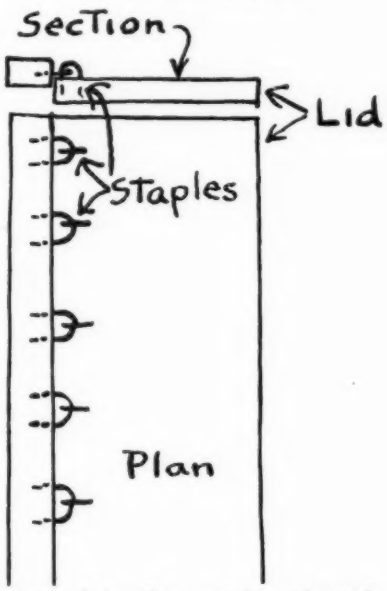
This being a State Hi Way project we are at a loss, we cannot do anything but put up with such, as the State Road Department cares not much—the farther they can pop the rocks the less the shovel has to move, in fact they shoot things so hard that they have to move the shovels and tractors around the bend to keep from destroying them.

I just believe this idea can be used by you and others to great advantage in many ways.

Sincerely yours,
WESTERN POWER COMPANY,
J. A. Smith, Supt.

Field Notes

(*Continued from page 459*)



tance into the wood and each carefully placed. A first class hinge will be the result. Use as many staples as may be needed to give the hinge its desired strength. It will not be the equal of a manufactured hinge, of course, but for an emergency job it will do very well.

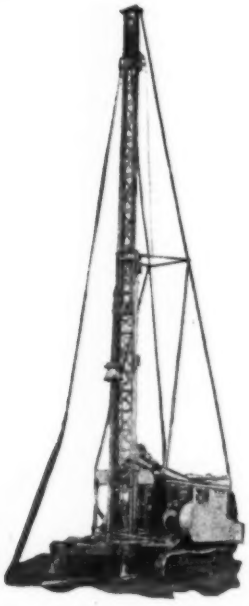
EQUIPMENT
You Ought to Know About

New Blast-Hole Drill Introduced by Bucyrus-Erie

Newest in the Bucyrus-Armstrong line of blast-hole drills is the 27-T, just introduced by Bucyrus-Erie Company. The new drill rig weighs 18,400 pounds, and has a tool capacity of 2,000 pounds.

A number of these machines have already been shipped for use by large mine and quarry blast-hole drill operators. The performance of the first of these machines in its first month on the job shows that it drilled 4544 feet of 6-inch hole through iron ore and Taconite at a per foot operating cost of only eleven cents, a figure that includes all power, labor, and supply costs. Daily production was more than 200 feet, with holes averaging about 22 feet in depth.

Outstanding exclusive features of the new 27-T include, as regular or optional equipment, a new built-in tool wrench, special bumper reel, large operator platform and other operator conveniences, rubber-insulated tool guide and sheaves, rubber shock-absorber under the crown sheave, and a fast, snappy, drilling action. The 27-T is furnished with 33 or 40-foot derrick, caterpillar-type mounting, and a choice of gasoline, Diesel, or electric power. Full information may be obtained by writing to Bucyrus-Erie Company, South Milwaukee, Wisconsin.

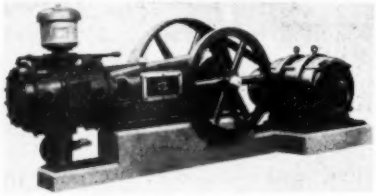


Goodrich "Earth Mover" Tires

The B. F. Goodrich Company, Akron, Ohio are now manufacturing and placing in service heavy duty "Earth Mover" tires for use on heavy duty construction equipment. These tires weigh 449 pounds each and are designed to carry more than eight tons on each casing. Many of these tires are now being used in place of the crawler type wheel by a number of dump wagon manufacturers.

Gardner-Denver Improved Compressor

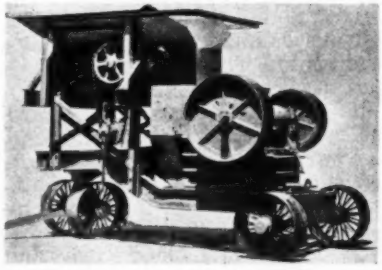
The Gardner-Denver Company announces an improved single stage, horizontal air compressor for heavy-duty full load service and continuous operation at low power costs. Known as the "RX" Compressor, it has enclosed dust-proof construction without sacrifice of accessibility.



Another feature of the "RX" compressors is the Electro-Pneumatic control. With this control the compressor starts unloaded and the air supply is automatically adjusted to fit the air requirements. The compressors are equipped with Timken Tapered Adjustable Roller Main Bearings.

Portable Apron Feeder Crusher Unit by Universal

A feeder crusher unit recently developed by the Universal Crusher Company, Cedar Rapids, Iowa, for a large high-production rock crushing operation involves the use of a Universal Primary Jaw Crusher mounted on a portable rig, together with an apron feeder superimposed above it permitting of a steady feed of rock into the crusher.



This combination of crusher and feeder mounted on a single mobile unit is made to operate in conjunction with a similar crushing equipment on which is mounted a roll crusher for secondary crushing. A belt conveyor carries the primary crusher rock from one crusher to the other; a second conveyor unit handling the final product to temporary storage bins.

Semi-Trailer Mack Truck

Mack Trucks Inc., Long Island City, New York have introduced a large capacity hauling truck of the semi-trailer type. This truck, capable of carrying 14 cubic yards of material, is powered by a six cylinder heavy duty engine. The body is all aluminum construction with a steel plate over the floor. Other equipment includes an outside mounted telescopic hoist. The semi-trailer truck will travel at a top speed of 32 m.p.h.

Sullivan Announces New Rock Drill

The Sullivan Machinery Co., 307 North Michigan Ave., Chicago, Ill. has recently developed a new rock drill for deep hole work

(Continued on page 466)

payload GAINED

YOUR tractor moves two kinds of weight—dead load and payload. Each costs money to move, but only payload pays dividends. Every pound of dead load eliminated from the tractor means an extra pound of payload hauled.

Excess tractor weight is reduced through proper balance between power, speed and weight. Allis-Chalmers pioneered the BALANCED tractor—it was the Model "35" (now the "K") and the Model "L" which completely changed the trend of tractor design and performance. These and other A-C Models have led the way to a new kind of higher-speed, lower-cost dirt moving. These tractors speed up your job because they are designed to give maximum performance in the higher speeds—the speeds at which you do more than 90 per cent of your dirt-moving work.

Get the complete story on what A-C BALANCE means—in reduced investment, wider usefulness, higher speeds, quicker pick-up, better hill climbing, fuel savings, less maintenance—and lower bidding. Tractor weight saved is extra payload GAINED!

MODEL "K-O"

Because of their BALANCE, A-C Tractors have never been equalled for bulldozing. This "K-O" Oil Tractor is feeding a gravel plant at Garfield, Utah.

MODEL "S-O"

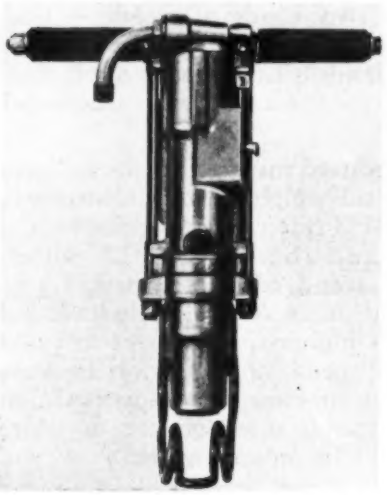
Time saved to and from the fill; lower cost per yard. That's what A-C BALANCE means in this "S-O" Oil Tractor, owned by Isabella County, Mich.

gnition
CTORS
THE RIGHT TIME

Equipment You Ought to Know About

(Continued from page 462)

in hard rock. The drill, L-12, weighs 64 pounds and it is claimed can handle the heavy deep hole



drilling with the same speed of a heavy weight sinker and yet not fatigue the drill runner. All parts are made to precision exactness from selected alloy steels which are specially heat treated. For the past 18 months the drill has been going through tests for endurance and performance on properties selected for hard drilling conditions.

Ashley Core Punch Bar

E. I. duPont de Nemours & Co. announce a new type core punch bar designed by H. O. Ashley of Sibley, Illinois. This core punch bar applies the principle of the pile driver to the old method of using the bar. This is done by using 1½ inch standard pipe, with handles attached, as an outside shell. The core which fits inside the shell is made from 1 inch pipe having a steel point on the lower end and a pipe "T" handle on the upper end. It is claimed that this new bar is of great advantage in working in water and blasting stumps.

Movable Floor for Truck Bodies

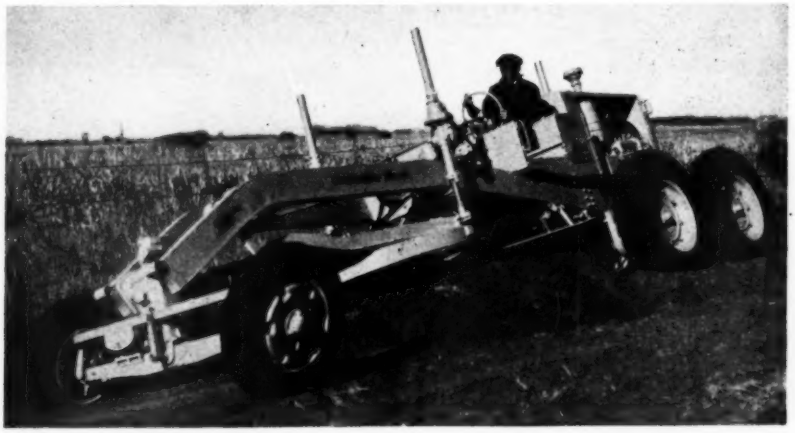
A movable truck floor which simplifies loading and unloading, has been introduced by the Easton Car & Construction Co. This new floor consists of a single sheet of extremely durable cord rubber belting supported beneath by tiers of steel rollers. The belting is long enough to be rolled one complete floor length to either end of the truck. This complete movement of the floor from end to end of the body provides a new and different method of loading and unloading.

"LORYFLOR" is operated by means of a crank handle which is used to roll up the floor. The operator may use this handle at either end, or either side of the truck. It requires little effort for one man to move the load in or out of the body regardless of the weight or nature of the load. A complete movement of the floor end to end of the body can be accomplished in a few seconds. At all times the loading or dumping action is controlled by the operator. Almost any type of load such as sand, coal, bags and packages or large pieces of heavy machinery can be handled.

Caterpillar Auto Patrol

Caterpillar Tractor Company, Peoria, Illinois, are manufacturing several types of Auto Patrols for road construction and maintenance. Diesel No. 11 is a power controlled machine equipped with a 60 H.P. Caterpillar Diesel engine. Standard equipment includes a 12 foot blade ¾ in thick, hand and foot brakes, fenders and full bumpers on single drive machines, and short bumper on tandem drive machines. Many special attachments are available such as, axle leaning wheel, cab-panels, canopy top, spark arrester, curtains for canopy top and radiator, hood doors, blade and extensions, top extensions for snow plow, electric lighting system, etc. Diesel No. 10 is powered by a Caterpillar 44 H.P. Diesel engine, has a 12 foot blade ¾ in. thick, hand and foot brakes, and short bumper. Special attachments are available for this model as they are for Diesel No. 11. The weight of Diesel No. 11 with tandem drive is 18,550 lbs. With single drive it is 16,520 lbs. The weight of Diesel No. 10 with tandem drive is 15,960 lbs. The weight with single drive is 13,410 lbs.

BUCYRUS ERIE
RED ARCH
dragline buckets
Built for fast handling and long life, RED ARCH dragline buckets are quick filling, clean dumping, correctly balanced. Available in three types, sizes ⅜ to 14 yards. Write for bulletins.
BUCYRUS-ERIE
EXCAVATING, DRILLING AND MATERIAL HANDLING EQUIPMENT
SOUTH MILWAUKEE, WISCONSIN, U.S.A.

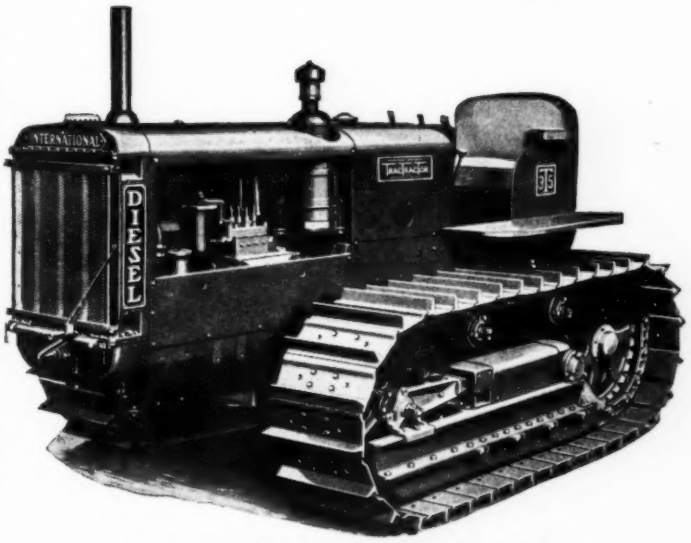


For your convenience in writing to Bucyrus-Erie, you will find a card bound in this issue.

INTERNATIONAL *Announces* Two New TRACTRACTORS

● The popular features which have won International TracTracTors such an enviable position in the crawler tractor field are now available in two new TracTracTors. One is the Model TD-35 DIESEL, which follows the design of the larger Model TD-40 and brings you the many advantages of the International DIESEL Engine in a somewhat smaller tractor at a lower price. The TD-35 is a true DIESEL—in design, performance, and economy—yet it starts on gasoline and converts itself automatically to full DIESEL operation after warming up for one minute or less.

The other new TracTracTor is the Model T-35—a 6-cylinder spark-ignition-type tractor built for efficient operation on gasoline or distillate.

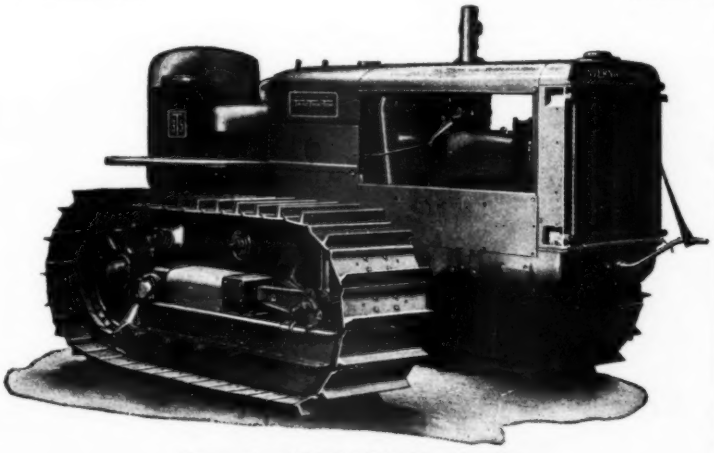


International Model TD-35 DIESEL TracTracTor

With the exception of the engines, these two new TracTracTors are practically identical. Both feature variable-speed governors; 5-speed transmissions; ball bearings at 43 points; replaceable cylinders; Tocco electrically hardened crankshafts; special dust seals; fuel strainers; air cleaners; oil filters; and unit construction throughout. With this type of construction, important working parts may be removed as units, enabling the owner to make adjustments or replacements in the shortest possible time. This important time-saving feature keeps maintenance costs down.

These two new International TracTracTors (available in standard or wide tread) are already serving many branches of industry, adding to the reputation built up through the years by the International T-20, T-40, and TD-40 DIESEL. International Industrial Power also includes a full line of wheel tractors, and power units in sizes up to 110 maximum horsepower.

The nearest International Industrial Power dealer or Company-owned branch will gladly supply complete details on request.



International Model T-35 TracTracTor

INTERNATIONAL HARVESTER COMPANY
(INCORPORATED)
Harvester Building Chicago, Illinois

Brief Specifications

	Model T-35	Model TD-35
*Belt horsepower (max.)	46	43
*Drawbar horsepower (max.)	38.5	36
Speeds in m.p.h. at 1750 r.p.m.	1¾ to 4	1¾ to 4
Number of cylinders	6	4
Bore and stroke, inches	3⅝ x 4½	4½ x 6½
R.p.m., full-load engine speed	1750	1100
Length overall, inches	132⅛	132⅛
Width overall, inches	58¼	58¼
Height, base of shoe to top of air cleaner, inches	76¼	76¼
Shipping Weights (approximate)		
Standard tread	10,050	10,550
Wide tread	10,800	11,300

*Official Tests

INTERNATIONAL Industrial Power

For your convenience in writing to International Harvester Company, you will find a card bound in this issue.

SOMETHING MAY HAPPEN

A hospital bed is a dull place to most people, but our William Z. Williams finds a scheme to while away the tedious hours — and fatten his purse at the same time

By **FREDRIC BROWN**

Illustrated by **J. A. PATTERSON**

Mr. D. Itch, President of the D. Itch Digger Company, roused himself from sleep and struggled across the room to quiet the insistent ringing of the telephone.

"Hello, is this Mr. Itch?"

"Yes."

"Mr. D. Itch, President of the D. Itch Digger Company?"

"Yes, dammit; this is D. Itch!"

"Oh, it's you, Mr. Itch. This is William Z. Williams calling from Pearkia, Illinois. I was on my way back from South America when I got stopped here. Hear about the revolution? Well, anyway, I'm back. How are you, Mr. Itch?"

"Did you call me up in the middle of the night," bellowed Mr. Itch, "to ask me how I am?"

"Of course not, Mr. Itch. I have have a big idea and it was too good to keep until morning. But you haven't asked me how I am, Mr. Itch, and if you're curious, I've got a broken ankle."

"Hmm. How did that happen?"

"I slipped on a peanut shell, Mr. Itch."

"A peanut shell?"

"A peanut shell. I know it seems strange, and even the doctor says he's known lots of people to slip on banana skins, but that I was the first one he ever saw who managed to do it on a peanut shell."

"But what is this idea you mentioned? To use power shovels to shell peanuts, or have you invented a non-skid sidewalk?"

"It's not either of those, Mr. Itch. I'm going to promote a shovel derby."

"You are doing to what a which?"

"To promote a power shovel derby. Why not? People like to see horse races. Why wouldn't they like to see a shovel race? For a purse and everything. The one-yard shovel that digs the most dirt in three days wins. Why not?"

"Well, to begin with . . . "

"To begin with, I haven't anything else to do. I've been sitting here looking out of the hospital window at the Pearkia fair grounds right across the street, and there is a big state fair just beginning, and I could maybe even make some money out of it. Nobody's ever had a power shovel derby before."

"Well, no, but . . . "

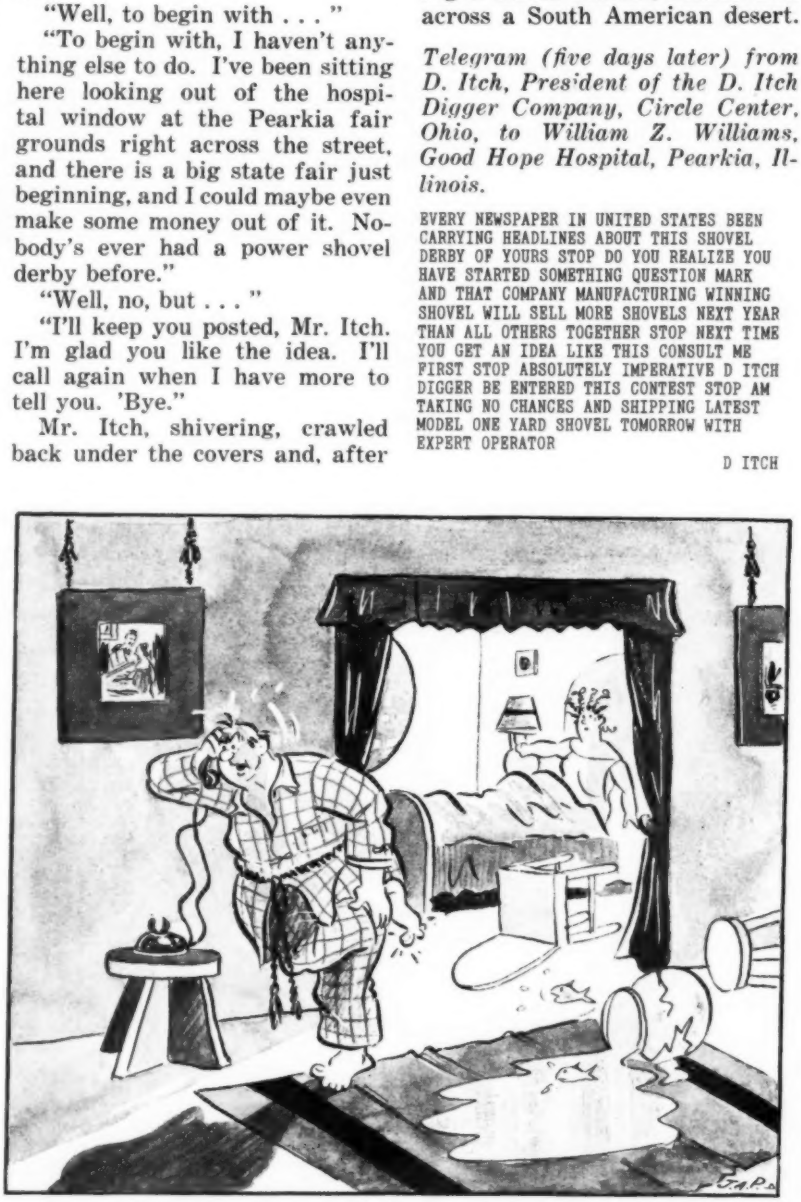
"I'll keep you posted, Mr. Itch. I'm glad you like the idea. I'll call again when I have more to tell you. 'Bye."

Mr. Itch, shivering, crawled back under the covers and, after a long effort, returned to sleep, wherein two large power shovels, each wearing a derby and carrying a movie camera, chased him across a South American desert.

Telegram (five days later) from D. Itch, President of the D. Itch Digger Company, Circle Center, Ohio, to William Z. Williams, Good Hope Hospital, Pearkia, Illinois.

EVERY NEWSPAPER IN UNITED STATES BEEN CARRYING HEADLINES ABOUT THIS SHOVEL DERBY OF YOURS STOP DO YOU REALIZE YOU HAVE STARTED SOMETHING QUESTION MARK AND THAT COMPANY MANUFACTURING WINNING SHOVEL WILL SELL MORE SHOVELS NEXT YEAR THAN ALL OTHERS TOGETHER STOP NEXT TIME YOU GET AN IDEA LIKE THIS CONSULT ME FIRST STOP ABSOLUTELY IMPERATIVE D ITCH DIGGER BE ENTERED THIS CONTEST STOP AM TAKING NO CHANCES AND SHIPPING LATEST MODEL ONE YARD SHOVEL TOMORROW WITH EXPERT OPERATOR

D ITCH



• *"Did you get me out of bed to tell me that?"*

Telegram from William Z. Williams:

DERBY STARTS TOMORROW NOON STOP YOUR SHOVEL WILL ARRIVE TOO LATE STOP IT STOP BUT DONT WORRY MR ITCH ONE OF THE SEVEN ENTRIES WHO HAVE PAID ENTRY FEE TO COMPETE FOR PURSE IS A D ITCH SHOVEL STOP I SAW TO THAT STOP IT IS ENTERED BY LOCAL CONTRACTOR

WILLIAM Z WILLIAMS

Mr. Itch, anxiously scanning the latest headlines in his stack of newspapers, dropped them to answer the telephone.

"D. Itch speaking."

"This is Williams, Mr. Itch. Gee, the derby is going to go over with a bang. It starts in two hours, at noon today, and the shovels are lined up and waiting now. And you ought to see the crowd. I have a swell view of all of it from my window."

"But how about the D. Itch shovel? I tell you, Williams, you're giving me gray hair before my time. Do you know what it means to us if that D. Itch shovel loses? I guess you don't. How is the operator? Can he run it well enough?"

"He should be able to, Mr. Itch. He's been running it for fifteen years."

There was an awful silence at the Circle Center end of the line. Then faintly, "What did you say?"

"That's what I called up to tell you, Mr. Itch. I'm sorry, but when the contractor showed up with his shovel this morning, it turned out to be one of your 1922 models. It's running fairly well, though, he says. But it's so old that nobody but he can operate it."

Mr. Itch groaned. "Can't you dig up another D. Itch shovel to enter?"

"I'm afraid I can't. There doesn't seem to be another D. Itch one-yard anywhere nearby. Lots of other sizes, but no one-yards. And besides I officially closed the entries last night, and it wouldn't be fair to reopen them. And . . . "

Mr. Itch groaned again.

"But don't worry too much, Mr. Itch. Maybe something will happen."

"What do you mean, maybe something will happen? What can happen? How can a decrepit wreck fifteen years old possibly win against six new shovels? What can happen?"

• *"Bookies are taking bets on this derby in every big city in the country!"*

"Well, I don't know, Mr. Itch. But I was talking to one of the porters here. He's an awfully interesting chap. He used to be a plumber and a steeplejack, and lots of other things, and he says that nothing is ever hopeless, and I think he's right. His name is Napoleon Bender, and he . . . "

Mr. Itch exploded. "At a time like this you tell me by long distance telephone the name of your porter because he says nothing is ever hopeless! Bah! Think, Williams, what are the terms and conditions of this contest? Maybe it can be called off?"

• *"He's an awfully interesting chap."*

"It can't, Mr. Itch. Here's how it is. There are seven shovels entered. I got a hundred dollar entry fee for each of them, and I'm putting up a five hundred dollar purse for the winner. There are thousands of people on the ground waiting already and the derby hasn't even started yet. The shovels are lined up waiting for the whistle at noon. They work four hours today, eight tomorrow, eight the next day, and quit at the noon whistle on the final day. Three full eight-hour days altogether. And people are really interested, and . . . "

"You're telling me that people are interested. Do you know that the bookies are taking bets on this in every big city in the country? That every newspaper is carrying feature articles?"

"Yes, Mr. Itch. I sent stories to all the biggest ones myself, and . . . "

"What are the conditions of the contest?"

"Well, Mr. Itch, they are thirty yards apart on a big grassy field

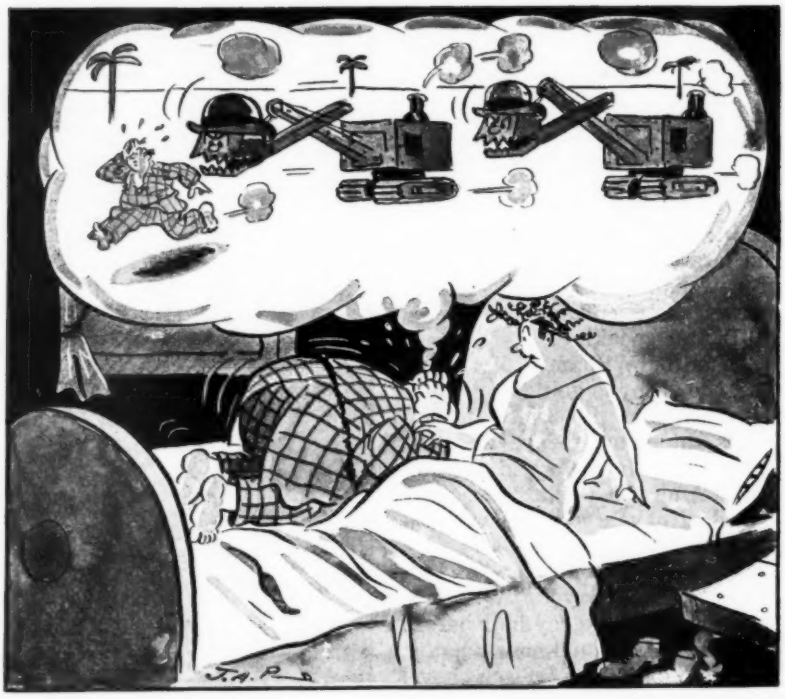
—a football field, to be precise. The manager liked the idea so well that he's paying for replacing the soil and resodding and he paid for putting up the judges' platform under the water tower."

"What water tower, I thought you said a football field?"

"It's along one edge of the field, and right in the shadow of Pearkia's pride—the biggest water tower in the middle west. Each shovel has two dump trucks working with it; they operate in pairs in a continuous cycle, and as they have to go only a few yards to dump, they can keep the shovels busy. The fair management pays for the trucks, and I get a 2% cut of the gate on the increased attendance. That isn't much, but I'm doing this to break even on the hospital bill and have some fun."

"Well, maybe you're breaking even, but you're likely to break the D. Itch Digger Company; and maybe you're having fun, but I'm not."

"Cheer up, Mr. Itch. Maybe something will happen. I'll keep you posted."



• *" . . . dreamed two shovels wearing derby hats were chasing me across the desert."*

Telegram from William Z. Williams to D. Itch:

D ITCH SHOVEL DOING BETTER THAN EXPECTED END OF FIRST AFTERNOON ONLY TWO TRUCKLOADS BEHIND LEADER

WILLIAMS

Telegram from William Z. Williams to D. Itch (24 hours later):

HAVE GOOD NEWS STOP ITCH SHOVEL KEEPING UP GOOD WORK AND IF CABLE HAD NOT BROKEN WOULD BE IN FIFTH PLACE STOP IS NOW ONLY ELEVEN TRUCKLOADS BEHIND STOP STILL HAS GOOD CHANCE IF SOMETHING HAPPENS

WILLIAMS

Telegram from D. Itch to William Z. Williams:

YOUR GOOD NEWS MAKES ME PRACTICALLY HILARIOUS HAVE HAD CANCELLATIONS TWO ORDERS ALREADY

D ITCH

Telegram from William Z. Williams to D. Itch:

CONTEST CLOSES TOMORROW NOON AND ITCH SHOVEL AT END OF TODAY FIFTEEN TRUCKLOADS BEHIND STOP CHEER UP STOP DIPPER STICK BROKE OFF IN LAST TEN MINUTES OF WORK TODAY STOP FOUR HOURS TO GO STOP MAYBE SOMETHING WILL HAPPEN

WILLIAMS

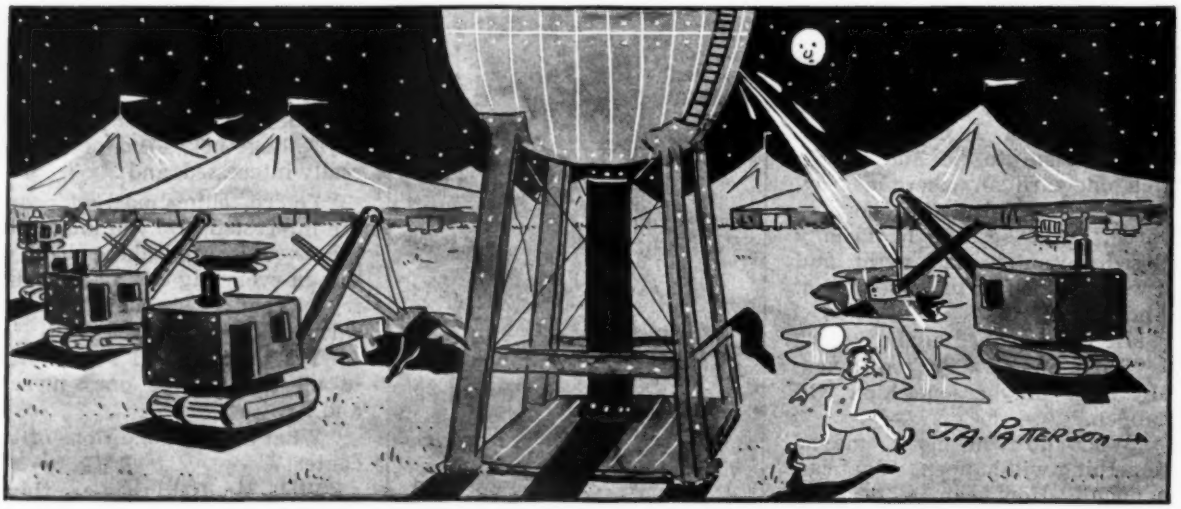
Telegram from William Z. Williams to D. Itch:

DERBY ENDED TEN MINUTES AGO STOP CONGRATULATIONS STOP D ITCH SHOVEL WON BY TWENTY TRUCKLOADS

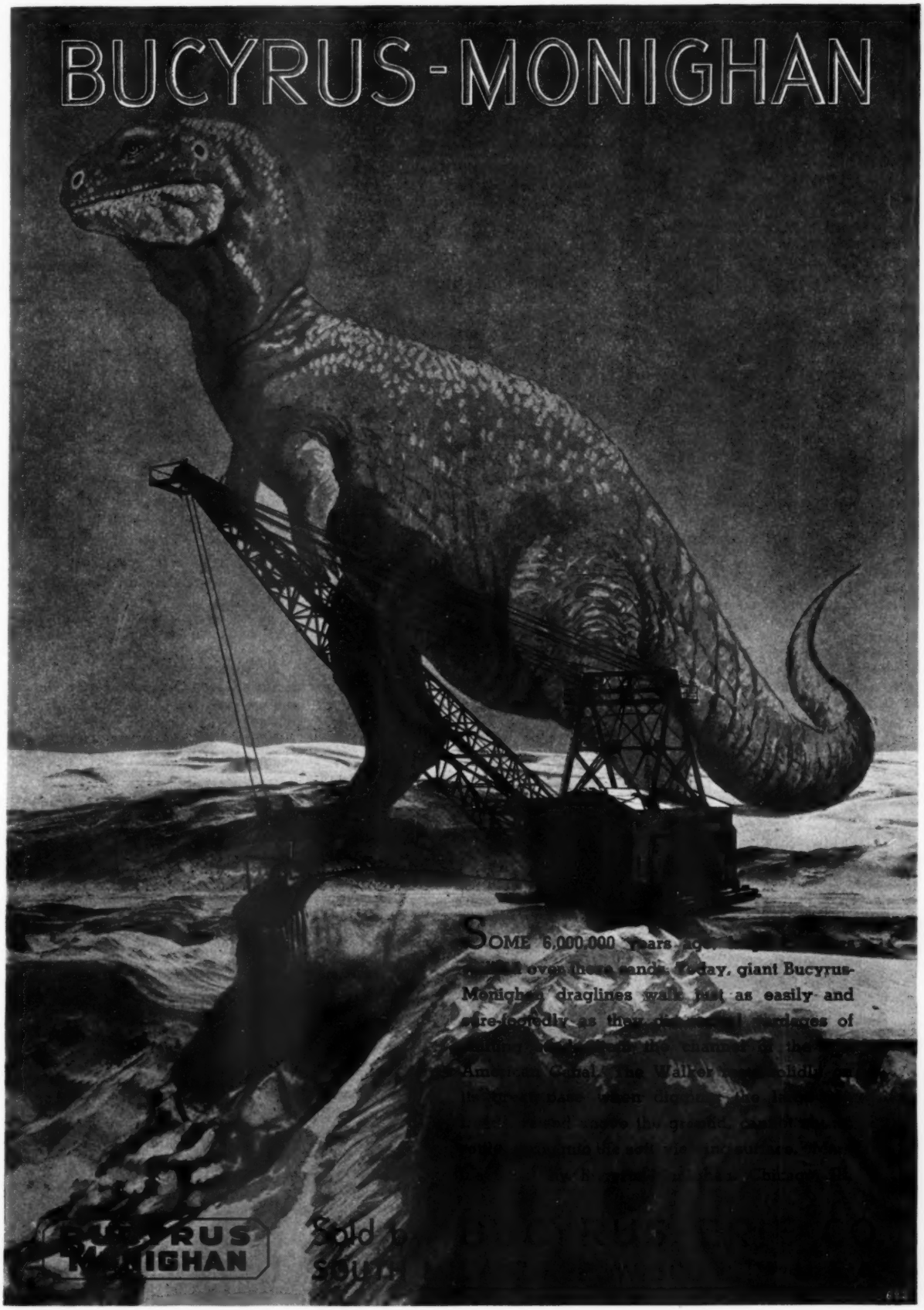
WILLIAMS

"Long distance call for you from Circle Center, Ohio, Mr. Williams," said the patient voice

(Continued on page 482)



• *"That night the biggest water tower in the Middlewest sprang a leak!"*



For your convenience in writing to Bucyrus-Erie, you will find a card bound in this issue.

SHOTS *from the Firing Line*

Employers Warned of Social Security Duties

Delinquent employers in the excavating profession have been advised by Commissioner of Internal Revenue Guy T. Helvering to make immediate tax returns as required under the provisions of Titles VIII and IX of the Social Security Act to avoid further payment of drastic penalties which are now accruing.

Every person employed in the excavating field comes under the provisions of Title VIII, which imposes an income tax on the wages of every employe, and an excise tax on the pay roll of every employer of one or more. This tax went into effect January 1, 1937, and is payable monthly at the office of the local Collector of Internal Revenue. The present rate for employer and employe alike is one per cent of the taxable wages paid and received, with an upper limit of $30 tax per calendar year per employe.

Under Title IX of the Act, employers of eight or more persons must pay an excise tax on their annual pay roll. This tax went into effect on January 1, 1936, and tax payments were due from the employers, and the employers alone, at the office of the Collector of Internal Revenue on the first of this year. This tax is payable annually, although the employer may elect to pay it in regular quarterly installments.

An employer will be considered to have employed eight or more persons, if on at least one day of each of twenty calendar weeks in any calendar year he has employed eight or more persons, regardless whether or not these eight were employed at the same time of day, and regardless whether or not the same eight persons were employed on each of the twenty days in question.

The employer is held responsible for the collection of the taxes from his employes under Title VIII, and is required to collect it when the wages are paid the employes, whether it be weekly or semi-monthly. Once the employer makes the one per cent deduction from the employe's pay, he must account for it to the Bureau of Internal Revenue.

This is done by making out Treasury form SS-1, which, accompanied by the employe-employer tax, is filed during the month directly following the month in which the taxes were collected. Forms can be obtained, and all tax payments must be made, at the office of the Collector of Internal Revenue in the district in which the employer's place of business is located.

Penalties for delinquencies are levied against the employer, not the employe; and range from 5 per cent to 25 per cent

---

Actual money, when paid as wages, is not the sole basis on which the tax is levied. Goods, clothing, lodging, if a part of compensation for services, are wages and a fair and reasonable value must be arrived at and become subject to the tax.

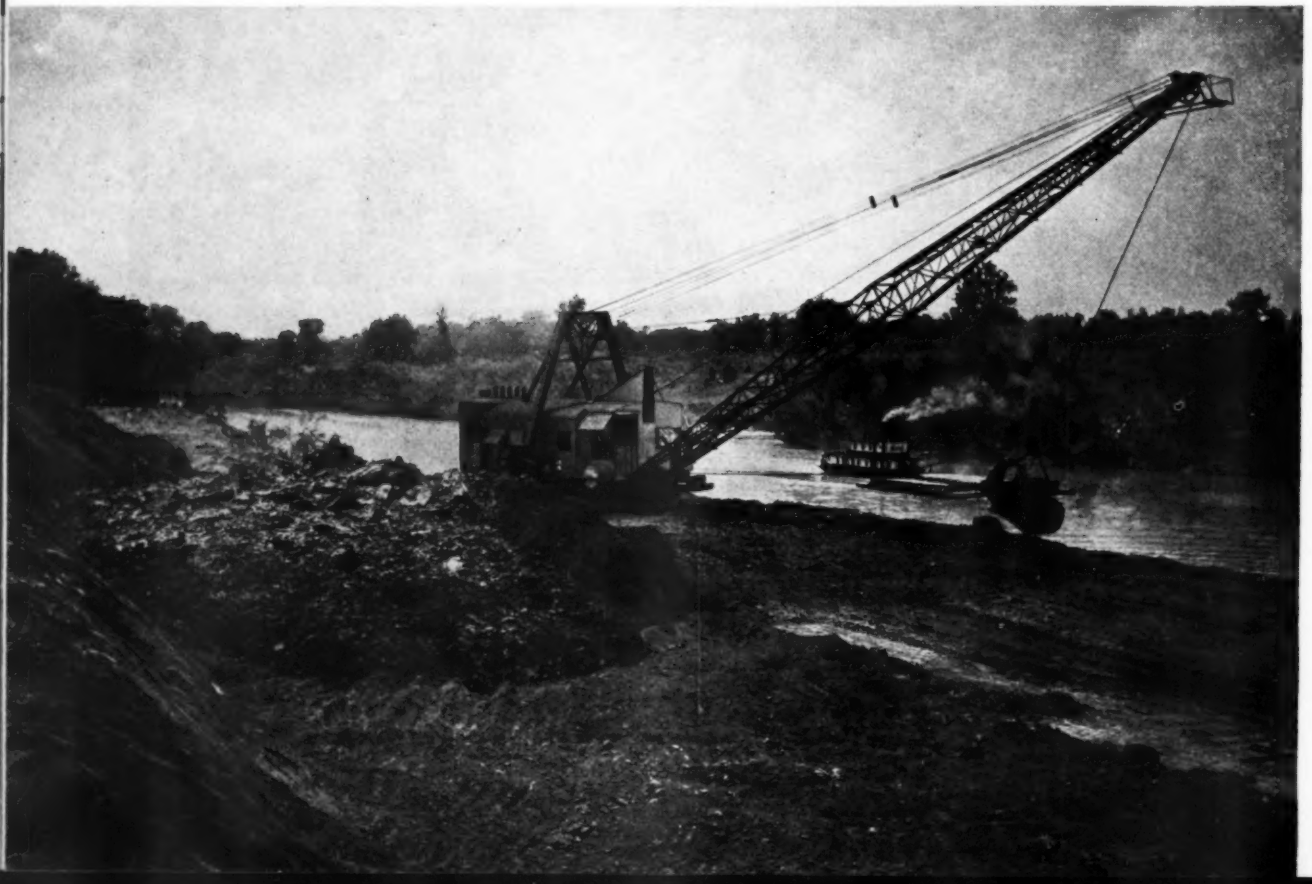
Commissions on sales, bonuses and premiums on insurance are wages and taxable.

Officers of corporations whether or not receiving compensation are considered employes for the purpose of taxation.

Wages paid during sick leave or vacation, or at dismissal are taxable.

Traveling expenses required by salesmen are not wages if the salesmen account for, by receipts or otherwise, their reasonable expenditures. That part for which no accounting is made is construed as a wage and is taxable.

Exercise great care in filling out the forms.



● **The Driver Company, subcontractor for all excavating in connection with a lock construction job on the Warrior River at Tuscaloosa, Alabama, is using this Bucyrus-Monighan 5-W in widening the river channel. General contractor for the lock is the Hardaway Company.**

When the *Digging is Tough*, You can Depend on *Atlas Diesels!*

Here is one of a pair of 50-B Bucyrus-Erie Shovels, powered by Atlas Diesels, used by Columbia Construction Company in excavating rock for the jetty at the mouth of Grays Harbor, Washington.

These two shovels loaded over 100,000 tons of jetty rock, several of the rocks weighing over 30 tons each. They have built 2 1/4 miles of road, much of it double track, through tough digging as shown in this picture.

When you run up against an excavating job like this, don't cringe and hesitate to tackle it. Buy standard shovels powered with Atlas Diesels and you will have equipment that can "take it" when the digging really gets tough.

Atlas Diesels of the fully enclosed type illustrated above are available in 3, 4, 6, and 8 cylinder models in the following range of horsepowers: 45, 60, 80, 90, 120, 140, 150, 165, 200 and 275.

ATLAS IMPERIAL DIESEL ENGINE CO.

Oakland, California — Mattoon, Illinois

ATLAS IMPERIAL

For your convenience in writing to Atlas Imperial Diesel Engine Co., you will find a card bound in this issue.

of the tax due, depending on the period of delinquency. Criminal action may be taken against those who willfully refuse to pay their taxes.

The employers of one or more are also required to file Treasury forms SS-2 and SS-2a. One copy of SS-2 and as many of SS-2a as the employer has employes can be obtained from the local Collector. No duplicates will be furnished. Both are informational forms and must be filed at Collectors' offices not later than July 31, 1937, covering the first six months of the year. After that they are to be filed at regular quarterly intervals. Form SS-2 will show the total of the taxable wages paid to all employes, and SS-2a the taxable wages paid each employe.

Participation in a state unemployment compensation fund, approved by the Social Security Board, does not exempt employers from the excise tax under Title IX. Nor does the fact that there is no state unemployment compensation fund relieve the employer of his Federal tax payments. In those states where an unemployment compensation fund has been approved, deductions up to 90 per cent of the Federal tax are allowed the employer who has already paid his state tax. These deductions are not allowed unless the state tax has been paid. The employer should obtain from the state unemployment authorities a special receipt for filing with his Federal return.

The Federal rate for 1936 was one per cent of the total annual pay roll, and for 1937 it is two per cent. The rate increases to three per cent in 1938 when it reaches its maximum. The annual returns are made on Treasury form 940, which can be obtained from the local Collector.

Veteran Draglines "Take It" on Irrigation Project

A major irrigation project now under way is the Roza Division, Yakima Irrigation Project. This is the last unit of a plan adopted by the United States Reclamation Service over 15 years ago. A narrow strip of land, approximately 90 miles long, and roughly parallel to the Yakima River, to the south and east of Yakima, Wash., is to be put under water. This strip contains some 72,000 acres and is high bench land as choice as any in the Yakima valley.

● **This is one of two veteran Bucyrus-Erie draglines being used by J. A. Terteling on the Roza Division of the Yakima Irrigation project. "Slippery" sand and concealed boulders make the going tough, but haven't been able to tie up progress.**

The Roza Division construction work, of which a part, only, is now under contract, calls for a diversion dam across the Yakima River; a tunnel, No. 1, 8231 ft. long of horseshoe section and 17 ft. in diameter after concreting, to carry the water across a bend in the river; a section of bench flume and canal roughly parallel to the river below the tunnel; an inverted siphon to carry the water under the river to the east side; a section of lined and unlined canal; tunnel No. 3, 9588 ft. long, of the same cross-section as No. 1, and reaching to the north end of strip of land to be reclaimed. After that come flumes and canals reaching the whole length of the 90 mile strip, together with another long tunnel, all to be contracted for later.

To date, No. 1 and No. 3 tunnels have holed out, (Morrison-Knudsen Co.) and about five miles of canal and bench flume are under contract to the J. A. Terteling Co., headquarters at Roza Project, Yakima, Wash. This company also has the contract for the siphon. Of the canal, approximately one-third is to be lined. After lining, the width at the bottom is 14 ft., the slopes on each side are 1¼ to 1. The approximate depth of water in the lined sections will be 11.2 ft. and in the unlined sections 12.02 ft.

In the canals so far undertaken by Terteling, there has been a considerable job of excavating. That portion east of the river and practically all completed now, represents 700,000 yards, largely cemented material. That on the west side of the river adds up to about 270,000 yards more, and late in June this excavation was nearing completion. All the excavation work on the Terteling contract on both sides of the river was accounted for by two Bucyrus-Erie 52-B draglines equipped with 3-yard buckets. They are not new machines, but rather two veterans with honorable records of achievement behind them.

One was at work on the west side of the river between the siphon site and Tunnel No. 1 when the job was visited. According to the operator, Austin Heath, this machine and another similar one worked on the Southerland Power Project in Nebraska, about 20 miles west of North Platte. This was in 1935, he said, and it was canal work in easily excavated material. Still, 2,100,000 yards, handled by the two rigs in 8½ months, was some record.

Here on the Roza project, the conditions are almost the opposite. No yardage record can be set up, for it is the toughest kind of going. The excavation is in a hillside of fine, dry sand, which sifts out in a stream at every swing of the bucket, mixed in with the sand are boulders ranging in size from a few inches up to three yards,

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New York, N. Y.

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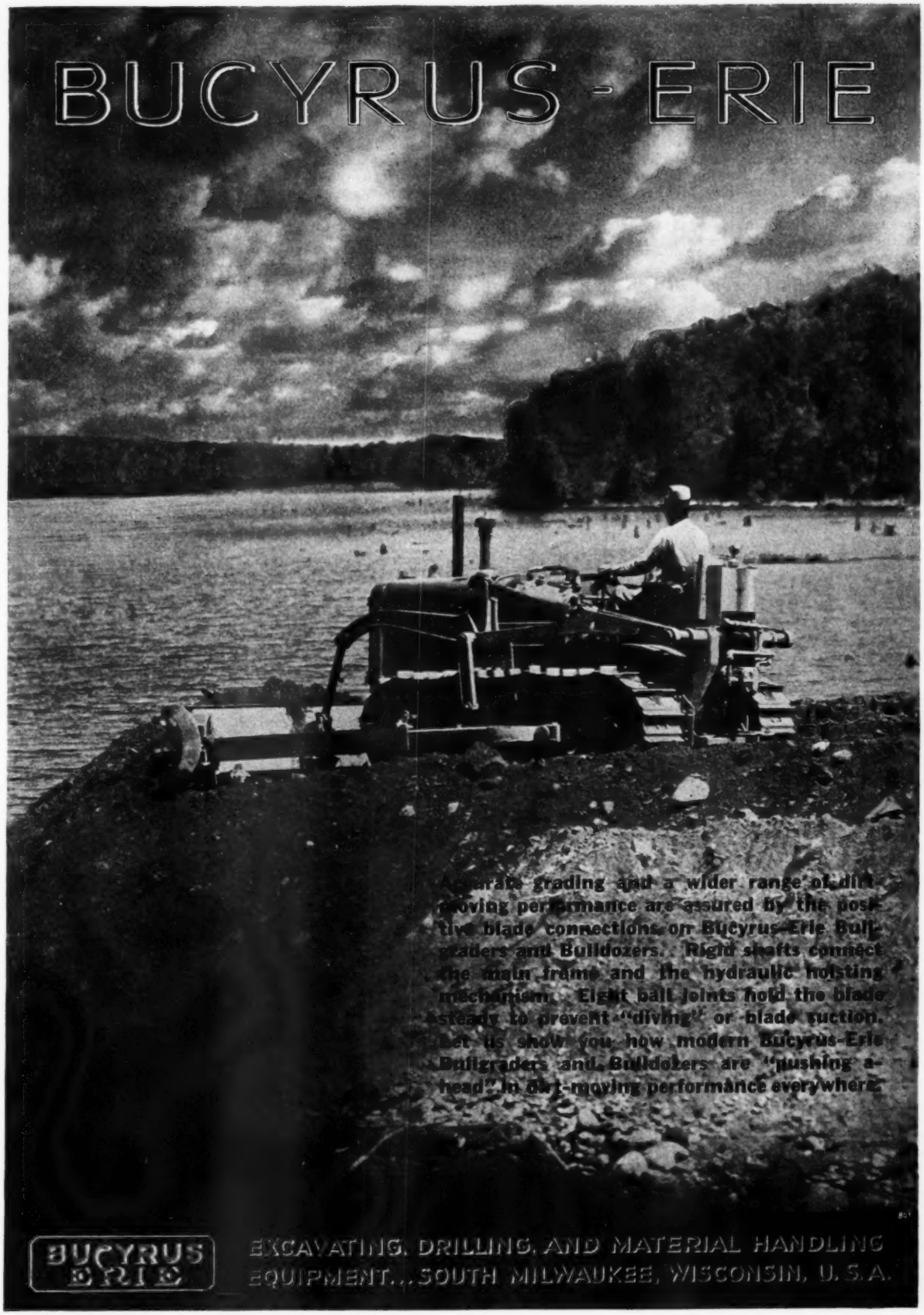

BUCYRUS-ERIE
Accurate grading and a wider range of dirt-moving performance are assured by the positive blade connections on Bucyrus-Erie Bullgraders and Bulldozers. Rigid shafts connect the main frame and the hydraulic hoisting mechanism. Eight ball joints hold the blade steady to prevent "diving" or blade suction. Let us show you how modern Bucyrus-Erie Bullgraders and Bulldozers are "pushing ahead" in dirt-moving performance everywhere.
BUCYRUS ERIE
EXCAVATING, DRILLING AND MATERIAL HANDLING EQUIPMENT... SOUTH MILWAUKEE, WISCONSIN, U.S.A.

For your convenience in writing to Bucyrus-Erie Company, you will find a card bound in this issue.

which cannot be seen by the operator.

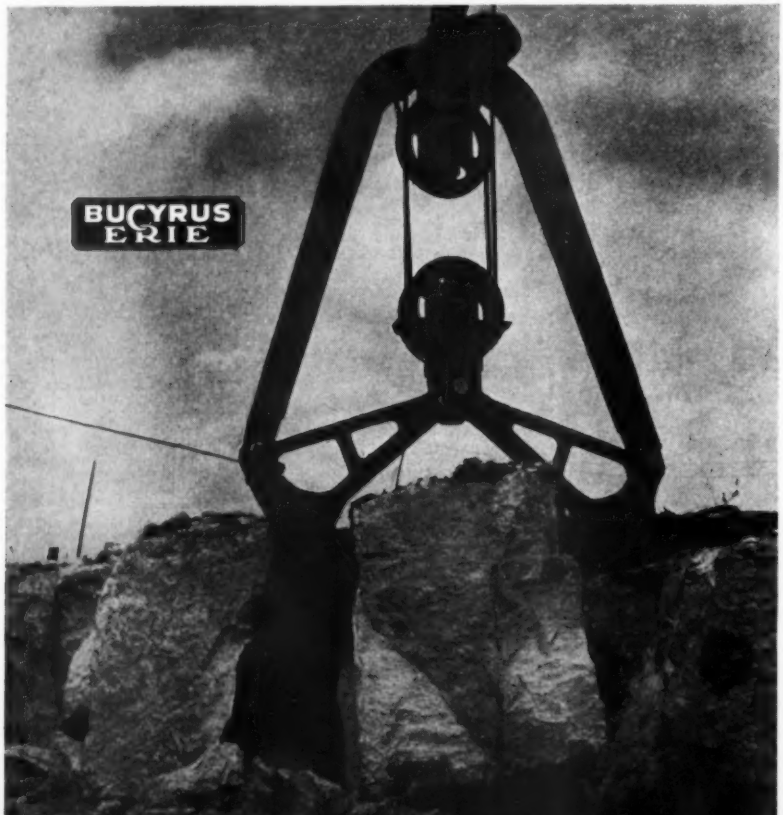
According to Heath, it is start and stop, dig and shock for hours on end with no let up, and very hard on equipment. But though the toughness of the work is maximum, harder than solid rock where you can see what you are doing, there has been a minimum of trouble with both of the 52-B's on this job. There has been no major trouble with either of them and no lay-ups for repairs aside from cable breakage and minor mishaps. Whatever records these veterans may have established in the past, they have established another here in ability to "take it."

Bonneville Power Bill

Introduced by House Rivers and Harbors Chairman Mansfield, a new bill places responsibility for operation and maintenance of the Bonneville plant on the Army Engineers. Installation of additional generating equipment will be handled by the enginers as directed by a Columbia River Administrator, who will be appointed by the Secretary of the Interior.

This administrator, advised by a committee representing the departments of War and the Interior, and the Federal Trade Commission, will market Bonneville power. He will be empowered to enter into contracts not exceeding 20 years duration, providing for rate revisions at not more than five-year intervals. Preference will be given to public power users. Private contracts will be cancellable on five years' notice to provide for growth of public demand.

Rates, drawn up by the administrator and approved by the Federal Trade Commission, will be set to meet costs, and to secure the widest possible distribution of power.



Simple . . . Safe . . . Sure

This Bucyrus-Erie Rock Grab solves rock-moving problems with modern, money-saving speed. Rock may be tipped, rolled, or picked up when closely surrounded by other pieces. This positive grab does away with slings and auxiliary equipment. Your load is accurately placed without resetting. Five sizes . . . 2½ to 20-ton capacities. Investigate savings possible on your rock handling with this modern Rock Grab.

BUCYRUS-ERIE

Tunnel Construction Award to Walsh

Walsh Construction Company of Davenport, Iowa was awarded contract for construction of twin tubes for the Queens-Midtown vehicle tunnel under New York's East River. The contract, calling for $21,300,000 was let by the New York City Tunnel Authority, and the work is being financed by P.W.A.

In the accepted contract, various revisions have been made resulting in a saving to the tunnel authority of $3,463,000.

The job will include driving two cast-iron tubes, 4,000 feet long, by shield methods. Material is river sand and rock. A clay blanket must be placed on the river bottom where the cover is shallow. A construction shaft will be erected at the Manhattan end of the twin tubes.

I. S. MacDonald will direct the work for the Walsh Construction Company, and O. Singstad will be chief engineer for the Tunnel Authority.

Ample Irrigation Water In West

An all-time high in security for Western reclamation project inhabitants was reported by the Bureau of Reclamation as water in storage reservoirs registered a new top record recently.

Where 19,626,017 acre-feet was stored on May 1, 1937, the total caught and safely held in Federal irrigation reservoirs on June 1, 1937 was 23,670,106 acre-feet, sufficient water to cover the State of Indiana one foot deep. This compares with 16,288,258 on June 1, 1936.

These reservoirs conserve the melting mountain snows to protect irrigation farmers operating on 3,000,000 acres served by reclamation dams from the long, sure summer droughts of the arid and semi-arid West.

"The May run-off was satisfactory," John C. Page, Commissioner of Reclamation, reported to Secretary of the Interior Harold L. Ickes, "in all regions except that of the Great Plains. Generally this is a good water year in the West, and the irrigationists are assured of good crops."

In Montana, South Dakota, Wyoming and Nebraska the May run-off was not large, but near the end of the month many localities in this region experienced rain. The stored water supply is sufficient to produce crops even here, but the acreages on one project, the Belle Fourche project in South Dakota may have to be curtailed. The position of the North Platte project in Wyoming and Nebraska was improved during the month.

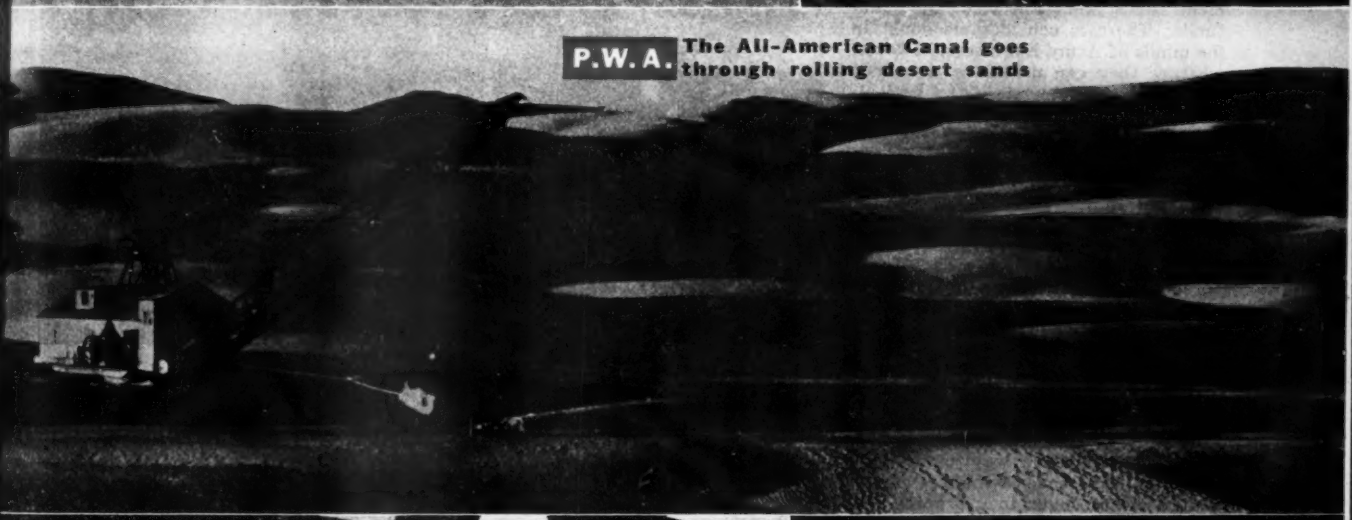
(*Continued on page 480*)

For your convenience in writing to Bucyrus-Erie, you will find a card bound in this issue.

P.W.A. Small projects as well as large have been P.W.A. — financed

P.W.A.

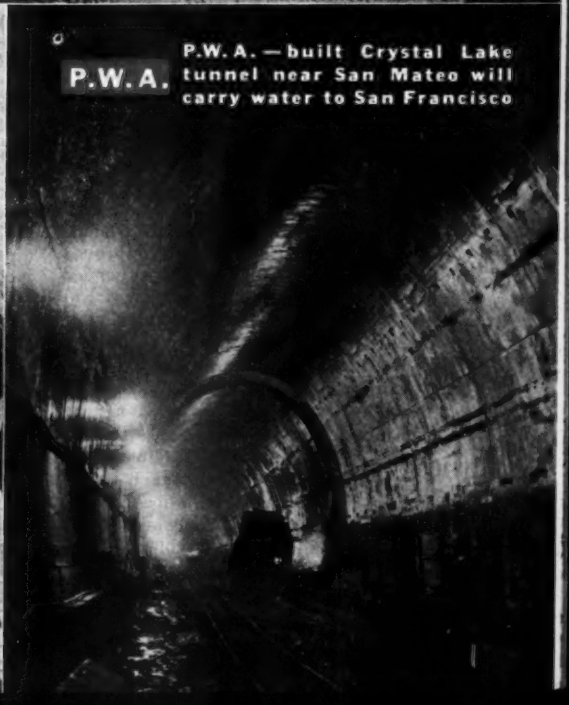
Through the contract system, P.W.A. projects have made efficient use of men and machinery



P.W.A. The All-American Canal goes through rolling desert sands

Outdoor repair work on the Gila gravity main canal near Yuma, Arizona

P.W.A.



P.W.A. P.W.A. — built Crystal Lake tunnel near San Mateo will carry water to San Francisco

Shots from the Firing Line

(*Continued from page 476*)

Non-Military Appropriation Bill Back to Senate

Flood control leaders are watching and waiting for the first opportunity to crash through the Supreme Court debate and present to the Senate the conference agreement on the War Department appropriation bill for non-military activities, including flood control and river and harbor work.

The House adopted the conference report July 9 and immediately thereafter an unsuccessful effort was made to get Senate concurrence. With stringent rules in effect during the bitter court fight, the report was presented to the Senate, but not acted upon.

Under the terms of the agreement, the lower Mississippi River will get $30,000,000 of unrestricted War Department funds and $15,000,000 of Relief funds. There is considerable doubt in the minds of Army Engineers, however, whether they can use more than half of the relief allotment in the agricultural Mississippi Valley.

The conference agreement gives $30,000,000 of unrestricted money and $30,000,000 of relief funds to the projects embraced in the Omnibus Flood Control Act. In addition to these sums, the President is reported to have agreed to allocate $12,500,000 of relief funds without relief restrictions to finance the construction of levees and floodwalls in the fronts of Ohio Valley cities.

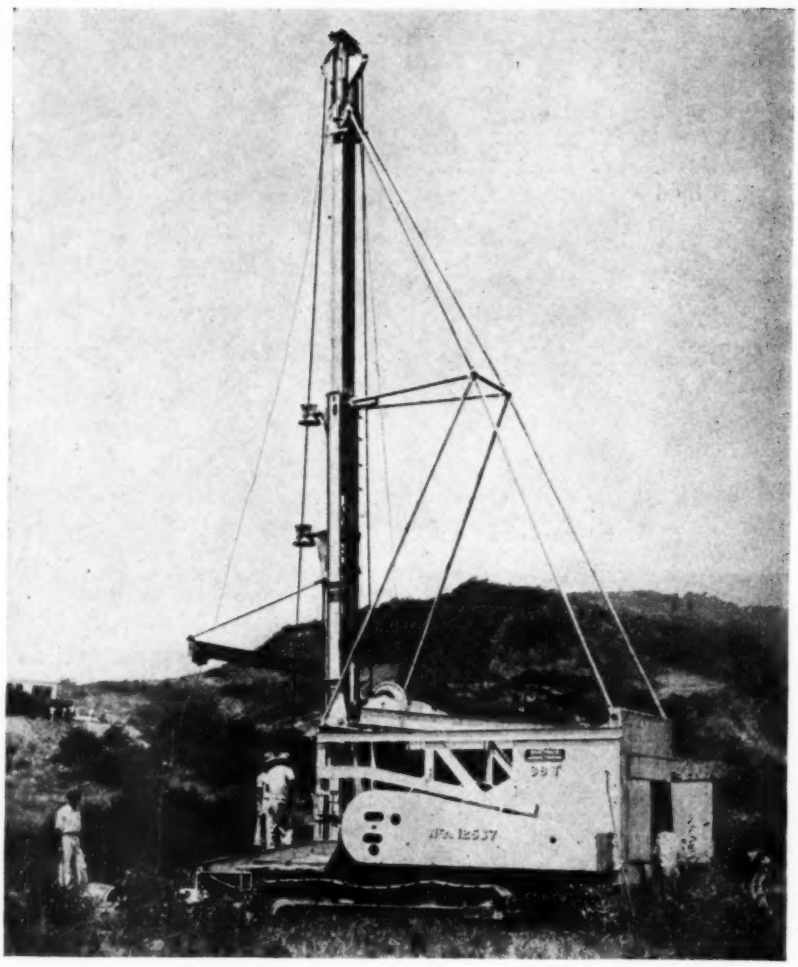
Appropriation of $128,000,000 for river and harbor work follows Budget recommendations and has not been in controversy.

Thus a huge construction program is ready to get under way just as soon as funds are made available. Army engineers are eager to get going and will lose as little time as possible in advertising for bids.

The text of the conference agreement:

"Flood Control — Omnibus Act — Strike out $60,000,000 and insert in lieu thereof the following: $30,000,000, and, in addition, $30,000,000 of the appropriation of $1,500,000,000 contained in the Emergency Relief Appropriation Act of 1937 shall be available exclusively for carrying out the provisions of such Flood Control Act, approved June 22, 1936, and shall be expended under the direction of the Chief of Engineers under the provisions established in and pursuance of such Emergency Relief Appropriation Act of 1937 and not inconsistent herewith: Provided, That the requirement in Section 1 of such Emergency Relief Appropriation Act of 1937 that no Federal construction project shall be undertaken unless and until there have been allocated and irrevocably set aside sufficient funds for its completion shall not apply to flood control projects authorized by such Flood Control Act, approved June 22, 1936."

"Flood Control—Overton Act—Strike out $45,000,000 and insert in lieu thereof the following: $22,500,000, and, in addition, $22,500,000 of the appropriation of $1,500,000,000 contained in the Emergency Relief Appropriation Act of 1937 shall be available exclusively for carrying out the provisions of such Flood Control Act, approved May 15, 1928, as amended by such Flood Control Act, approved June 15, 1936, and of such additional amount, $7,500,000 shall be in augmentation of the foregoing appropriation of $22,500,000, and the remainder shall be expended under the direction of the Chief of Engineers subject to the provisions established in and in pursuance of such Emergency Relief Appropriation Act of 1937 not inconsistent herewith: Provided, That the requirement in Section 1 of such Emergency Relief Appropriation Act of 1937 that no Federal Construction Project shall be undertaken unless and until there have been allocated and irrevocably set aside sufficient funds for its completion shall not apply to flood control projects authorized by such Flood Control Act, approved June 22, 1936."



Twelve-Inch Blast Holes Success in Brazil Quarry

Size of equipment is one outstanding feature of Lone Star Cement Company quarry operations in Brazil. Stripping is handled with a Bucyrus-Erie 950-B walking dragline swinging a 12-yard bucket on a 250-foot boom. Blast holes are now being put down with a new all-steel Bucyrus-Armstrong which drills a 12-inch hole.

To date, working in limestone, the rig has averaged over six feet of 12-inch hole per hour, working in eight-hour shifts. Average depth of hole is slightly over 54 feet. The large hole technique has worked out very successfully, powder costs per ton of rock brought down having been materially reduced and fragmentation much improved. Using a stock of six bits, and dressing them in batches, one or two sharpenings per month are necessary.

Before starting on its blast-hole work, the new rig was used to drill a 180-foot water well to provide the necessary supply for quarry operations.

Not in the Contract

The world-famous surgeon had successfully performed his spectacular operation. Disregarding all ethics, the crowded clinic burst into applause. Thereupon the surgeon raised his hand for silence and, as an encore, dexterously removed the patient's appendix.

Mr., Miss;
Meet, kiss.
More kisses;
Mr., Mrs.

Kind Old Lady: "Yes, my good man. I too, have had my trials."

Tramp: "Indeed, ma'am. And what did they pinch you fer?"

When someone asked Dumb Dora if she was ever troubled with improper thoughts, she said, "Why, no, I rather enjoy them."

"Darling, I could sit here and do nothing but look at you forever."

"Yeah, that's what I'm beginning to think, too!"

A small boy was asked to write an essay in as few words as possible on two of life's greatest problems.

He wrote: "Twins."

She: "I'm a girl of a very few words."

He: "Well, what do you say?"

She: "Yes."

"Lost: a lead pencil by Jennie Weems, blonde, blue eyes, five feet four inches, good dancer. Finder please call H-1722 between seven and eight P.M."

Newspaper editors sometimes get into trouble through proofreading errors. Publishing the following story caused an editor to leave town.

"Mrs. John Breinlinger presented her husband with an eight-pound baby girl on Thursday last. Mrs. Breinlinger was formerly Miss Anna Gray and very popular locally. The happy parents have the congratulations of all on this suspicious event."

J. A. PATTERSON

"Just our luck to be workin' down instead of up!"

An uplift worker, visiting a prison, was much impressed by the melancholy attitude of one of the men she encountered. "My poor man" she sympathetically inquired, "what is the length of your term here?"

"That depends on politics, lady," he replied, "I'm the warden."

"I'm going to love you until the cows come home!"

"Okay, fresh, but meanwhile you don't have to pet the calves!"

"What is the difference between a bathroom and a cemetery?"

"There is no difference. When you gotta go—you gotta go."

The savage tribes of Africa pay no taxes. It is a mystery therefore what makes them savage.

"Here's my bill," said the lawyer. "Please pay down $500, and $100 a week thereafter for ten weeks."

"Sounds like buying an automobile," said the client.

"I am," returned the attorney.

Mirabelle: "Did you ever wake up in the morning with a grouch?"

Florabelle: "Heavens, no! I'm not married!"

At a highway builders' convention some contractors thought they'd have fun with a hat check boy who was noted for his ability to return the right hat to every guest without using checks.

Entering and thrusting their hats at him simultaneously, five of them came out at different times and he gave each one the right lid.

"How did you know that was my hat?" asked the last fellow.

"I didn't," was the reply.

"Then," said the contractor, thinking he had the boy this time, "why did you give it to me?"

"Because," snapped back the bright lad, "It was the one you gave me."

SOMETHING MAY HAPPEN

(Continued from page 470)

of the hospital switchboard operator.

"Hello, Williams. This is Itch. What on earth happened? I can't believe it!"

"Well, I'll have to go back to yesterday evening, Mr. Itch. I was sitting looking out of my window and watching them get ready to weld the broken dipperstick of the D. Itch Shovel, when I had an idea. Napoleon Bender, the porter, was in my room—you remember I mentioned him, Mr. Itch?—and I sent him across the street to tell them to hinge the broken dipperstick with the bucket piece upside down." "Huh?"

"To tell them to fix the dipperstick so it was hinged, and with the bucket upside down. I told him to say that the owner of the shovel had said to do it that way. And they did."

"Well, William, since the Itch entry won, far be it from me to criticize anything you did, but just why in holy. . . ."

"Be patient, Mr. Itch. I'm explaining. Then Napoleon Bender came back, and he was as curious as you are. He watched with me out of the window a while, and it was sure some sight to see the seven shovels lined up, each just outside its hole, and the workmen working on the D. Itch shovel and . . . "

"Will you please skip the scenery, William?"

"But it was the scenery that gave me the idea, Mr. Itch. Well, I'll skip it anyway. I turned to Napoleon, and asked him if he expected to be a porter all his life. He said he hoped not; and I asked him how he would like to be a vice-president of the D. Itch Digger Company, and he said . . . "

"You asked him what?"

"Now just don't get excited, Mr. Itch. You'll understand in a minute. You can give him an office to sit in, and he'll be perfectly happy. But to get back. I told him the way to get to be a vice-president was to do some big service, and I told him that it was worth a million dollars to your company to win this derby."

"Hum, you exaggerated some, but not an awful lot."

"And then, Mr. Itch, I told him that I had a hunch that if there were a heavy rain, or a cloudburst, during the night—it would greatly affect the outcome of the derby. He asked me how one could cause a cloudburst, and I admitted that I didn't know, and we looked out of the window a while more at the scenery across the way. And then he said, "Oh!! and left."

"Well, maybe he said, 'Oh,' William, but I can't say that I see my way clear to say it just yet. Can you . . ."

"Well, Mr. Itch, I told you once that Napoleon used to be a steeplejack and a plumber and had lots of other abilities, didn't I? Anyway, it seems that some time in the middle of the night the biggest water tower in the middle west sprang a leak."

"Oh."

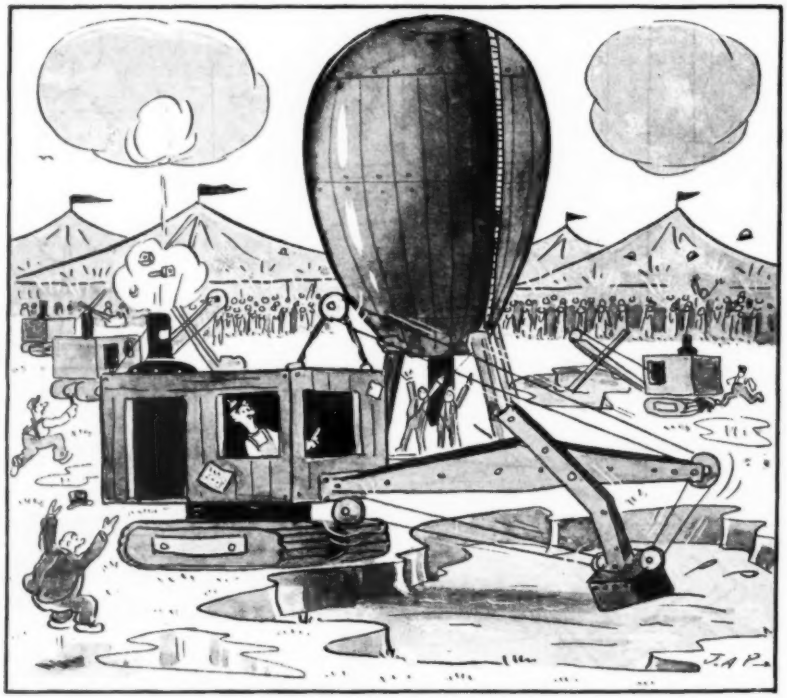
"And when the operators came down to their shovels in the morning, they found the field a mud puddle and each of the seven pits dug by the shovels had water six or seven feet deep in it. I'm telling you, Mr. Itch, there was bedlam. None of them could run down into the holes and operate under six feet of water, nor could they enlarge the length or width of the pits because they were already dug the full size of the areas allotted to them."

"A faint light is beginning to dawn . . . but go on, William."

"Well, Mr. Itch, the operator of the Itch shovel stood there looking at the hinged dipper-stick and upside down bucket, and cussing to himself, and suddenly I saw him throw his hat into the air, and call his assistant. They spent half an hour rearranging cables and stuff, and then they inched up to the edge of the pit and started digging—as a dragshovel! The pit was only eight feet deep, and he could dig to fourteen with the new arrangement, and cover almost the whole bottom area, by working around the edge."

"Didn't any of the others try it too?"

"Oh, yes. All of them rushed out for auxiliary equipment and by ten-thirty three of them were working as clamshells, two had dragline buckets in action, and one other was operating as a



• *"And went to work as a dragshovel!"*

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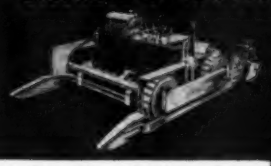

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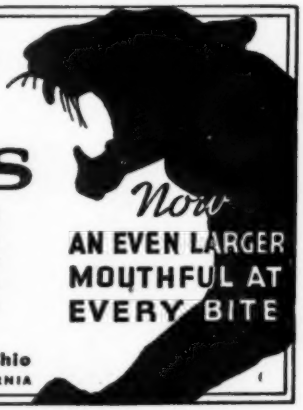

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trench hoe. But the Itch entry had too big a start, and when the final whistle blew at noon, it was still twenty truckloads to the good!"

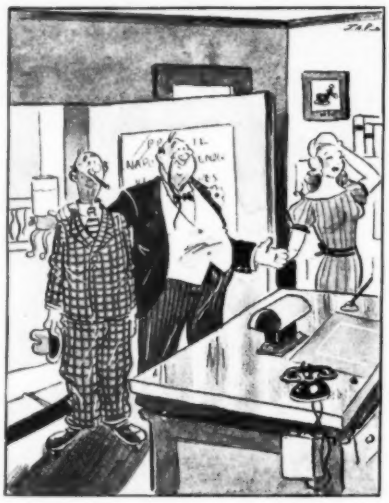
"Hmm. Well, William you tell Mr. Bender that his job is waiting for him, and advance him . . ."

". . . train fare. I already did, Mr. Itch, and he's on his way to Circle Center now. Give him a nice salary and a mahogany desk to put his feet on, and . . ."

". . . and a pretty secretary. I know. But what can I do for you, Williams? This victory is worth real money to us."

"I don't want a thing, Mr. Itch. With my cut of the gate, I'm clearing a couple of thousand for a week's fun. I'll be discharged from the hospital in a few weeks, and I've got a big idea that I'll tell you about later!"

Mr. Itch shivered, and replaced the phone gently on its hook.



• *"A nice salary and a private office for him."*

Old Man Geology

(Continued from page 455)

syenite cut is a 50-B Bucyrus-Erie steamer with a 2-yard bucket. This shovel operates 16 hours a day—two 8-hour shifts—and loads about 1,700 cubic yards each 16 hours.

A gasoline-powered Northwest Model 105 shovel with a ¾-yard bucket is used 8 hours daily to clean slopes and for other odd jobs.

The rock is hauled away from the Bucyrus-Erie shovels to the fill by a 4-yard Lynn Tractor Truck, nine AK-6 Mack Trucks with 7-yard Wood bodies and five AC Bulldog Mack trucks with 7-yard Heil bodies. A Ford-pick-up and a Ford rack truck are kept busy hauling drill steel and on various other errands. Oil and gasoline are delivered by a local oil distributor.

Two Baker bulldozers are used for leveling off fill, one of them pushed around by an Allis-Chalmers L-O Diesel tractor and the other by an Allis-Chalmers K gasoline tractor.

A total of 165 men work in 8-hour shifts. Unskilled and intermediate labor is obtained through an employment service in Herkimer, N. Y., designated by the U. S. Employment Service. Typical minimum wage rates are:

Unskilled labor, 45c per hour.

Truck drivers, 55c per hour.

Tractor operators, 65c per hour.

Firemen, oilers, drill runners & powdermen, 75c per hour.

Carpenters, 80c per hour.

Blacksmiths, 81c per hour.

Crane, dragline & power shovel operators, $1.00 per hour.

The contractor's responsible officials at the home offices are: Brayton B. Babcock, President; J. R. Callanan, Vice President; Rolland Kinnear, Treasurer; and Keith M. Callanan, Secretary.

John Kawaske is the contractor's Superintendent on the job. Howard Winnie is Assistant Superintendent. Ralph Champagne is Engineer.

The State of New York, Department of Public Works; Division of Highways, is the legal owner. Frederick Stuart Greene is Superintendent of Public Works; Captain Arthur W. Brandt is Commissioner of Highways; and L. D. Brownell is District Engineer. Frank Misner, Assistant Civil Engineer, is constantly on the job for the Division of Highways.

The Federal Government is represented by A. G. Bruce, District Engineer, U. S. Department of Roads, and Wm. Snyder, Senior Federal Highway Engineer.

Electrician (on roof): Hang on to two of those wires, will you Ed?

Ed: Sure.

Electrician: Feel anything?

Ed: No.

Electrician: Well, don't touch the other two, then. There's two thousand volts in them.

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